Natural History Museum Library
000131001

72.A.b.
o.
H.

A VERTEBRATE FAUNA OF SUTHERLAND, CAITHNESS, AND WEST CROMARTY

BY

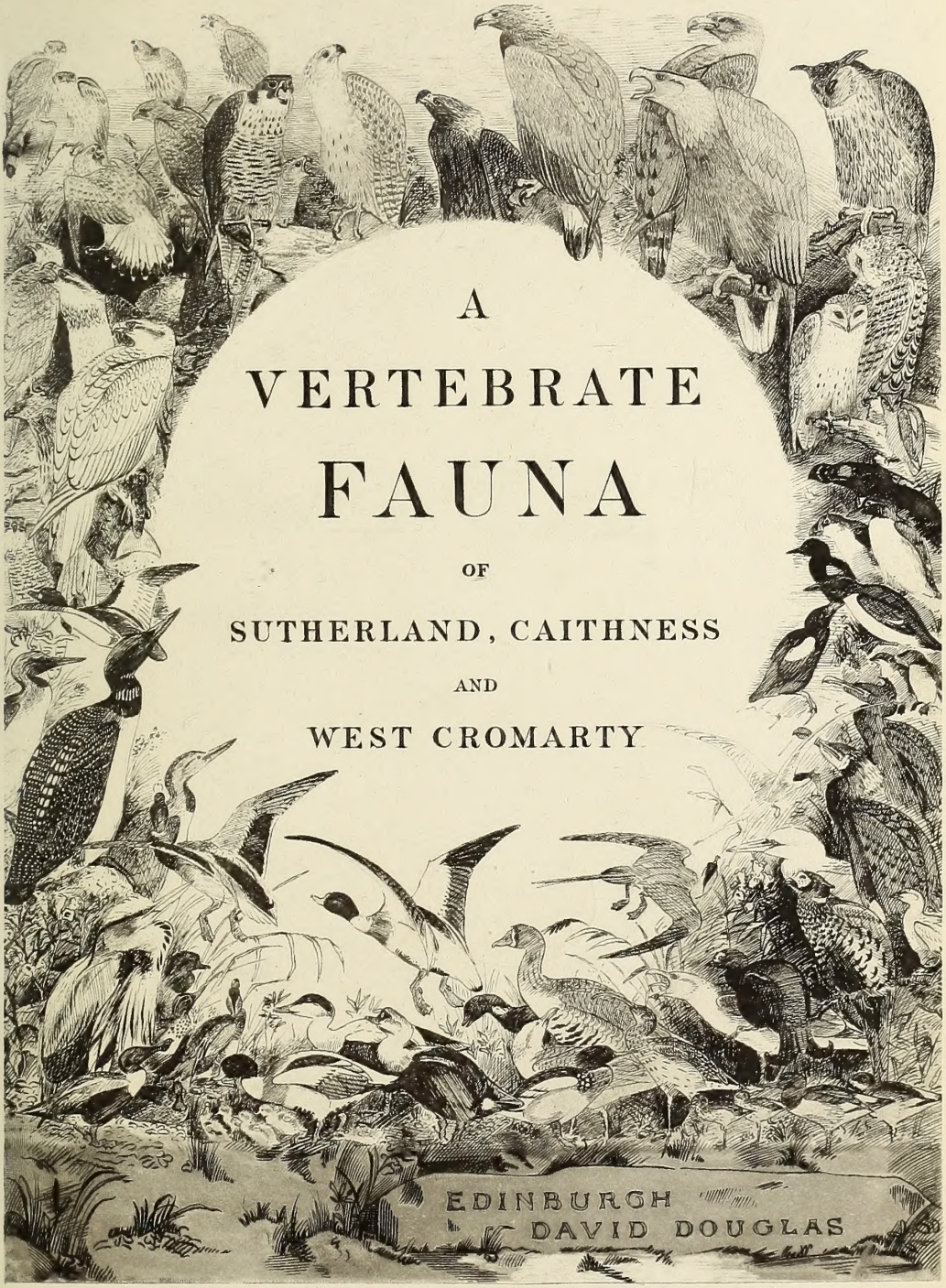
J. A. HARVIE-BROWN, F.R.S.E., F.Z.S.,

VICE-PRESIDENT ROYAL PHYSICAL SOC. EDIN.
MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, ETC.

AND

T. E. BUCKLEY, B.A., F.Z.S.,

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, ETC.


A
VERTEBRATE
FAUNA
OF
SUTHERLAND, CAITHNESS
AND
WEST CROMARTY
EDINBURGH
DAVID DOUGLAS

BRITISH MUSEUM
Z
D
NATURAL HISTORY

PREFACE

Prefaces to books are perhaps becoming more and more out of fashion, still we would wish to say a few words on the scope and intentions of this volume.

To begin with, this is the first volume of a series (*i.e.* should this, our first attempt, meet with the approval we would wish) which, unlike most local Faunas, lays aside to a great extent political boundaries, and is marked out by others, much more natural, such as watersheds. This, we think, is a "new departure," but one which we imagine will commend itself to the favourable notice of most naturalists.

We do not pretend to say that this is by any means a perfect Fauna of our district, but we do claim, so far as our experience goes, that our records of distribution and migration are *facts*, and based upon observations made for the last twenty years over the greater part of the district included.

There are several reasons why we could not lay claim



to perfection in our Fauna, two of which come very prominently before us: first of all, the scarcity of the population over wide areas of these northern counties; and this leads to the second, viz., want of observers. Most keepers and shepherds can give one a very good account of the larger birds of their own district, but take but little notice of the smaller ones, as they are, except in the cultivated districts, very scarce. The further south we go the larger birds get scarce, and the smaller ones increase in numbers.

The population increases also as we go south, and in nearly every town there is some person who is a naturalist, and who practises preserving birds. Now the small birds naturally claim precedence there, as they are in the majority, and so are far more closely observed than they are in such districts as ours.

Our aim has been rather to issue a Handbook of the Vertebrate Fauna of the district, upon which much lengthier observation even than our twenty years' experience may build up at some future time a fuller and more popularly satisfying Fauna.

To the Proprietors of *The Illustrated London News* we are indebted for permission to reproduce the engraving of Handa; to Mr. A. Young for his kindness in allowing us

to use his lovely water-colour sketches of Suilbhein and Ardvrak Castle; to Mr. John G. Millais for the loan of his sketches, the Titlepage, and Hawk and Heron; finally, to Mr. D. Nicolson for the panoramic sketch of the Interior of Caithness.

J. A. HARVIE-BROWN.

T. E. BUCKLEY.

October 1887.

CONTENTS

PAGE

INTRODUCTORY; AND PHYSICAL ASPECTS, . . . 1

SOURCES OF INFORMATION, ... 4

MEMOIR OF HENRY OSBORNE, ... 11

GEOGRAPHICAL POSITION AND IMPORTANCE OF SUTHERLAND, CAITHNESS, AND WEST CROMARTY, . 13

DESCRIPTION OF THE PHYSICAL FEATURES OF SUTHERLAND AND CAITHNESS, ... 20

THE FAUNAL POSITION OF SUTHERLAND AND CAITHNESS, ... 59

VERTEBRATE FAUNA OF SUTHERLAND AND CAITHNESS, 62

MAMMALS, ... 65

BIRDS, ... 97

REPTILES, ... 247

PAGE

AMPHIBIA, ... 250

FISHES, ... 252

APPENDIX, ... 299

INDEX, ... 315

ILLUSTRATIONS

Illustrated Titlepage, by John G. Millais. Engraved by T. & R. Annan, ... *Titlepage*

Suilbhein, Sutherland. From a Drawing by Archibald Young. Engraved by John Adam, ... *Page* 29

Panoramic Views from Warth Hill, by D. Nicolson—(1) Looking South, and (2) North, ... 32

View of Handa Island, by the late Samuel Read, by permission of *The Illustrated London News*. Engraved by T. & R. Annan, . 39

Hawk and Heron, by John G. Millais. Engraved by T. & R. Annan, ... 64

Plover's Nest and Eggs. From a Photograph from Nature. Engraved by T. & R. Annan, ... 96

Snow Bunting. Drawn by T. G. Keulemans, . . . 136

Snow Bunting Corrie. From a Photograph by Mr. Lunn. Engraved by T. & R. Annan, ... 140

Ardvrak Castle, Loch Assynt, Sutherland — Old Site of Osprey's Nest. From a Drawing by Archibald Young. Engraved by John Adam, ... 177

Eggs of *Larus ridibundus;* Varieties taken in Sutherland, . 230

Common Trout rising. From a Drawing by E. F. T. Bennett, Musselburgh. Engraved by T. & R. Annan, . . . 297

Do. Do. Do., ... 344

Map of Sutherland, Caithness, and Ross, . . . *at the end*

INTRODUCTORY; PHYSICAL ASPECTS.

In the joint preparation of the account of the first-named county, we have considered that while T. E. Buckley takes in hand the eastern parts of the district, as having had greater experience of that portion, J. A. Harvie-Brown should undertake the western and northern portions for the same reason; and it became advisable to define more accurately the two districts thus separated. This was done with comparative ease, as the high-road between Lairg and Tongue forms a very natural as well as convenient division; Buckley knowing more of the fauna to the east of that line, and Harvie-Brown more of that to the west. An advantage is also found in that it fairly well represents a natural division between the high and rugged ranges of the western land, and the smoother, more gently undulating moss and moorland of the eastern division; which latter, though it claims amongst its most noticeable features several goodly mountains, such as Ben Clibrick and Ben Armine, and a wild stretch of deer-forest around Dunrobin, yet is, perhaps, better described as a vast waste of moorland, with oases of woodland, and in the east and south a considerable portion of reclaimed land and forest-growth.

Since the first appearance of "The Vertebrate Fauna of Sutherlandshire,"[1] a considerable amount of personal inspection of the adjoining county of Caithness has been accomplished, and we are now able to offer what we believe to be a fairly complete account of this remaining portion of the faunal area of "Sutherland," as defined in our previous account. Harvie-Brown personally in-

[1] *A Tour in Sutherlandshire, etc.* By Charles St. John. Appendix on the "Vertebrate Fauna of Sutherlandshire," pp. 291-374.

spected the greater portion of the coast-line, and visited the Pentland Skerries,—the bird fauna of which has some very close relationships with that of East Caithness, especially as regards migrational phenomena,—in the summer of 1885; and he had several opportunities of obtaining views of the far-stretching inland "flows," as well as of inspecting the south-eastern portions around Berriedale and Langwell.

During his stay at Thurso and Wick, Harvie-Brown also made the personal acquaintance of all the local naturalists, and spent many pleasant hours in their company. Especially does he desire to thank Messrs. Lewis Dunbar of Thurso and William Reid of Wick for the keen interest they evinced and the assistance they rendered. To Mr. H. Osborne also in a most special and prominent degree are we grateful for placing in our hands the valuable manuscripts of his son, Mr. Henry Osborne, late of Wick, who, before his death in 1868, had nearly completed an Avi-fauna of his county. Indeed these manuscripts constitute a great part of this fauna, showing the state of the distribution of birds at and prior to that date, and proving of infinite value for purposes of comparison at the present time. As mentioned in the opening sentences of the part of our subject relating to birds, we have under all the species given prominence to Mr. H. Osborne's work; made it indeed the basis of this Avi-fauna. We must thank Mr. H. Osborne, sen., for the confidence he has placed in us, and we hope we have fulfilled our part both to his satisfaction and to that of our readers.

Our thanks are also most heartily accorded to others who have helped us, and who most hospitably received us, amongst whom are the Earl of Caithness and his resident factor, Captain Keith, at Barrogill Castle; the Rev. J. M'Pherson of Canisbay, whose pleasant company and good-fellowship we enjoyed on more than one of our excursions when staying at Huna; Mr. J. Sutherland and Sergeant Sandison, both of Wick, excellent taxidermists, well acquainted with the general bird-life of Caithness; to Mrs. Duff Dunbar of Ackergill Tower we owe our best thanks for introductions and assistance: and we will not forget our good friends the light-

house-keepers—Messrs. Gibson, Gilmour, Frazer, and M'Gee, at the Pentland Skerries; Mr. Charles Christian at Holborn Head; Mr. David Laidlaw at Dunnet Head, and Mr. Greig at Noss Head. To each of these, during our peregrinations, we made ourselves known, and were much pleased with the kind way in which we were always received; and with the interest which they all take in the work of our Migration Committee, even where, owing to description of light or situation, the stations do not yield large returns, as at Noss Head, Dunnet Head, and Holborn Head.

We are indebted to Mr. Lionel Hinxman and Mr. Benjamin N. Peach for kindly communicating to us their very interesting discovery of the nesting of the Snow Bunting in Sutherland, and we think it better to give *verbatim* the account as given us by the former gentleman, clear and succinct as it is, than to elaborate it by introducing any passages of our own. We also give extracts from Mr. Peach's letter, as the honour of finding the nest belongs equally to him; and we trust our readers will not think they have "too much of a good thing" by our giving each finder's account separately. We have great pleasure in being able to introduce an illustration of the corrie in which the nest was found, kindly photographed for us by Mr. Lunn.

SOURCES OF INFORMATION.

Of published records of the Fauna of the area, the authors have consulted the following, which are believed by them to represent all that exist, or nearly so:—

The Tour of Dr. Richard Pococke, Lord Bishop of Ossory, through Sutherland in 1760. From the unpublished MS. in the British Museum Library, with Notes, etc., by Daniel W. Kemp (in the press, 1886). Harvie-Brown, by the courtesy of Mr. Kemp, had an opportunity of examining a proof in pages of the above before going to press, and at Mr. Kemp's request he added some foot-notes and identifications of the birds mentioned by Dr. Pococke.

A Tour in Scotland. J. Pennant. 1769.

Tour in Scotland and Voyage to the Hebrides. J. Pennant. 1774.

The Old Statistical Account of Scotland, consisting of twenty-one 8vo volumes, each of from 500 to 600 pages, published between 1791 and 1797, and containing separate accounts of no less than 938 parishes, with many references to the Faunas of these parishes, some of which are valuable, and others of little use. Sir John Sinclair, Bart., of Ulbster, and native of the county—editor of the O. S. A.—himself dismisses the natural history of the parish of Thurso thus:—"Natural History.—Nothing remarkable occurs in this department" (*op. cit.* vol. xx. p. 540), and little attention evidently had been paid to the subject: four ministers only, out of eight parishes, who wrote for Sir John's great undertaking, speak of the Zoology. But a few facts of interest may nevertheless be culled from these old records, and such will be found under the different species.

General View of the Agriculture of Caithness. Captain John Henderson. 1815.[1]

[1] A most interesting volume, and one from which, did space permit, we would willingly quote more fully.

In connection with the map which illustrates this Fauna, it may be well for our readers to consult a very useful map in colours of the county of Caithness, contained in the last-mentioned work, which depicts the various areas of different soils and the characters of the different descriptions of country.

Caithness and Part of Orkney. T. S. Muir. Privately printed. N.D.

A History of the Earldom of Sutherland, to the year 1630. Sir Robert Gordon, Bart. First published in 1813, giving a curious account, often before quoted, of the *Ferœ Naturæ* which roamed through the great old forests of those days.

Account of Peterhead. Arbuthnot. 1815. This is what the author calls "A Nat. Hist. of the Fishes found on the Coasts of Buchan," which is not of much importance, but may be mentioned.

An Account of the Improvements on the Estates of the Marquess of Stafford, etc. etc., and on the Estate of Sutherland. James Loch, Esquire. London. 8vo. 1820.

Manuscripts of the Rev. Mr. Macdonald of Durness. 7 large thick 8vo volumes.[1]

Twenty-one Annual Reports of the Sutherland Association to date of 1885—the last three in our possession. The earlier Reports considered as valueless from our point of view, but the later ones containing items of some interest, the most important being the announcement of the Society's intention to publish a series of *Sutherland Papers*, of which Dr. Pococke's Tour in Sutherland is one; others are *The Geology of Sutherland*, by H. M. Cadell; *The History of Sutherland*; *The Folk-Lore of Sutherland.*

British Quadrupeds. W. Macgillivray. (Naturalist's Lib., vol. xvii.) 1833.

On the Quadrupeds and Birds inhabiting the County of Sutherland. P. J. Selby and Sir W. Jardine, Bart. (*Edin. New Phil. Journal*, January and April 1836.)

A Voyage round the Coasts of Scotland and the Isles. James Wilson. Edinburgh. 2 vols. 8vo. 1842.

The New Statistical Account of Scotland, vol. xv., relating to Sutherland, and published in 1845.

The New Statistical Account of Scotland (1841). Contains even less of interest than the Old Statistical Account; but the original list of

[1] Not seen by us up to date of going to press.

birds belonging to Dr. Eric Sutherland Sinclair, as well as very full lists of Geology, Botany, and Mammalogy appear under the parish of Wick, from the pen of Rev. Charles Thomson (p. 129), and there are some good remarks upon the county of Caithness at p. 179.

Wild Sports of the Highlands. Charles St. John. 1846.

The Birds of Sutherland and Ross-shire. Milner (*Zoologist*, 1848, p. 2014, and *Leeds Philos. and Lit. Soc. Annual Report* for 1880-81). In the latter an Appendix gives "Notices of the Rarer Birds in the Milner Collection," from the notes of the late Sir William Milner, whose remarks, when quoted verbatim, are indicated by inverted commas.

A Tour in Sutherland. Charles St. John. A List of the Birds of Sutherland is given. 1849.

A List of Fish that have been found in the Moray Firth and in the Fresh Waters of the Province of Moray. Rev. George Gordon. (*Zool.* 1852, pp. 3454 and 3480.)

Fish and Crustaceæ of the North-East Coast of Scotland. Lieutenant Dyce and George Sim.

This principally refers to "fish found in the vicinity of Aberdeen," but is useful for comparative purposes.

Notes on the Ornithology of Caithness. Messrs. Shearer and Osborne. (*Proc. Royal Phys. Soc. of Edinburgh*, vol. ii.) 1861.

In vol. iii. of the above, mention is made of various rare species recorded as obtained in Sutherland and Caithness.

We include species added and brought up to date of 1885 by W. Reid.

Osborne, H.: his MSS., which form the basis of our Caithness Avi-fauna, and date up to the year 1868, when he died.

On the Distribution of Birds in Great Britain during the Nesting Season. A. G. More. (*Ibis.*) 1865.

A most valuable paper; but Messrs. Shearer and Osborne are still the only authorities quoted for Caithness, and Mr. W. Dunbar (since deceased) the only authority for Sutherland.

Birds of the West of Scotland. R. Gray. 8vo. 1871.[1]

[1] Since the above was written, and went to press, we have to record the sudden loss to us all of Mr. Robert Gray, almost on the eve of the issue of his second work on Scottish Ornithology. He died on the 18th February 1887.

Sporting Days. John Colquhoun. 1866. Contains a chapter on the Wilds of Sutherland, and a List of the Birds of the district (pp. 235-255).

Two papers in the *Zoologist* on *Nesting Tours in Sutherland*, by J. A. Harvie-Brown. 1867 and 1868.

Lecture on the Feræ Naturæ of the British Isles. J. Colquhoun. 1873.

British Quadrupeds (2d Edition). T. Bell. 1874.

On Birds found Breeding in Sutherland. J. A. Harvie-Brown. Glasgow, 1875.

On the Mammals and Reptiles of Sutherland. Edward R. Alston and J. A. Harvie-Brown. Glasgow, 1875.

Supplementary Notes on the Birds found Breeding in Sutherland. J. A. Harvie-Brown, F.Z.S. (*Proc. Glasgow Nat. Hist. Soc.*, Sept.) 1877.

Fauna of Scotland—Mammalia. Edward R. Alston. Drawn up at the request of the Council of Nat. Hist. Soc. of Glasgow. 1880.

Fishes of Great Britain and Ireland. Dr. Francis Day. 1880.

On the Birds of the East of Sutherland. T. E. Buckley, F.Z.S. (*Proc. Nat. Hist. Soc. Glasgow*, April 26, 1881.)

Manuscript List of the Fish of Caithness, with notes by C. Peach, Esq.[1] Kindly placed at our disposal for purposes of the Fauna in 1884.

Memoir of Sir John Sinclair, Bart. Catherine Sinclair.

A List of the Birds killed in Caithness, and preserved by Mr. Lewis Dunbar, Brawl, dating from 1878. Many dates and localities of rarities in the Duke of Portland's collection at Welbeck Abbey are here given.

Manuscript Notes and Cuttings from Newspapers from Mr. W. Reid of Wick.

List of Birds obtained from Caithness, by Mr. Doeg, Manchester.

List of Birds in the Duke of Portland's collection at Welbeck, supplied by Mr. Whitaker of Rainworth Lodge, Nottingham.

Manuscripts of the late John Wolley, which were kindly placed at our disposal by Professor Newton of Cambridge.

Manuscript Journals of Capt. Savile G. Reid, kindly placed at our disposal, being notes taken during a journey to Sutherland and Caithness.

[1] Since the above was written, we regret to have to record the death of that eminent man of science, Mr. Chas. N. Peach, which took place on 28th February 1886. [See notice in *Scotsman* of March 1, 1886.]

Besides these, which bear more directly on the Fauna, the following should be noted as relating in a greater or less degree to Caithness Topography :—

Guide to Scotland. Black. Contains a good account of Caithness.
Guide to the Highlands, etc. Anderson. 1863. An excellent descriptive sketch (Part iii. p. 570 *et seq.*).
Geognosy and Mineralogy of Sutherland and Caithness. Professor Heddle. Physical aspects ably and most minutely described. (*Trans. Mineralogical Society of Britain.*) 1880-1884.
Prehistoric Remains of Caithness. Laing and Huxley. 1866.
Geognosy of Caithness. Cunninghame.
Robert Dick of Thurso. S. Smiles. 1878.
List of Birds found in the County of Caithness, and principally in the Parish of Wick. (*New Stat. Account*, p. 122. 1841.) Dr. Eric Sinclair Sutherland. Enumerates 191 species.

There are also numerous local Guide-books to certain parts of Caithness, written to induce the British tourist to visit the principal lions of the county, many of which contain much interesting local matter. Amongst those known to us we may mention the following :—

A Handbook to Thurso and Vicinity, and Guide to the County of Caithness. Thurso. Miss Russell. N.D.
Tourist's Guide to Sutherland and Caithness. Hew Morrison, F.S.A. Scotland. 1883.
Catalogue of Exhibition at Thurso. 1876.
Catalogue of Exhibition at Wick. 1874.

Descriptive passages occur in Hugh Miller's *Testimony of the Rocks*, and his *Footprints of the Creator* (in which Mr. Robert Dick is conspicuous for his share of the material supplied), and in the writings of Sir Roderick Murchison. In Hugh Miller's *Old Red Sandstone* (p. 57) occurs a descriptive passage, and the geology is epitomised. Professor Geikie has also many references—descriptive or geological—to the county, which are deserving of attention.

To the Duke of Portland we are indebted for his kind permission to obtain a list of the Caithness specimens which are at the present time contained in his Grace's collection at Welbeck Abbey, all of which were obtained on his Grace's own estates in the above county. This list Mr. J. Whitaker, Rainworth Lodge, Mansfield, has been so good as to make out for us.

We have also numerous cuttings from *The Field*, being contributions by Messrs. R. I. Shearer and H. Osborne, and by Mr. W. Reid, which have been referred to occasionally, when necessary, under their proper headings. Other materials will be found in the Migration Reports and Schedules of the British Association Committee on Migration, principally from the Pentland Skerries.

The above, along with our own note-books, journals, and egg-books, the assistance of several kind friends resident in the counties, and our personal observations conducted therein, are the materials which are at our disposal for this Fauna. If imperfect in the part relating to fish, it is simply because a great field for observation remains still almost untouched; and, though many species are known with almost absolute certainty to occur along the coasts, yet the actual results are scarcely sufficient to formulate anything like a correct estimate of the faunal value.

We must also express our heartiest thanks to Captain Savile G. Reid, who has most kindly placed at our disposal the whole contents of his journals of nesting trips in Sutherland and Caithness, whilst engaged along with Colonel Irby in collecting certain desiderata in nests, eggs, and birds for the South Kensington Museum. These admirably-kept notes are in themselves worthy of production, and we regret that the form in which we have disposed our other materials precludes us from giving prominence to many interesting observations upon certain habits of the rarer species, which if not new to all observers, are at least of considerable interest, especially when so happily described as they are in Captain Reid's journals. Captain Reid notes the general scarcity of bird-life on the moors and flowlands of East Sutherland and West Caithness as remarkable in autumn, "not even a meadow

pipit being seen for an hour at a time." Again: "A Sutherland moor, after the departure of the gulls, plovers, ducks, redshanks, divers, etc., that breed there in the spring and early summer, is not at all a happy hunting-ground for the ornithologist. Sometimes during a whole day on the hill we came across nothing but the grouse we were shooting, and the inevitable squeaky *wretched* meadow pipits."

The next step in our survey is to add all subsequent occurrences of rarities, or extensions of distribution up to date, *keeping this portion sufficiently distinct from the earlier work of Osborne and his predecessors*, and, where necessary or important, quoting our authorities. Our own individual observations in Caithness will be noted as dating 1885, previous to which year we had no personal knowledge, nor opportunities of acquiring any in the county, though we have for some years back always collected such materials as came to hand.

In this way we hope to place the avi-fauna of Caithness on a workable footing, which, until Mr. Osborne wrote his MS. accounts, can scarcely be said to have been done. The comparative distribution in 1868, when Mr. Osborne wrote,—and in 1885, of such species as were noted by us,—present some interesting data; but there is still room for more minute investigation in this direction than has yet been overtaken. Our object is, to the best of our ability, to place the Fauna in a clearer light, for the purpose of stimulating further discovery; for we think this more in accordance with the true interests of science than to withhold our present information on the chance of making it more complete.

A comparison of the fauna of the East and West is naturally suggested by our mode of treatment under each species; *i.e.* under Caithness and East Sutherland, on the one hand, and West Sutherland and Cromarty (which really belongs to the faunal area of "West Ross") on the other.

MEMOIR OF HENRY OSBORNE.

As we have based our Avi-fauna of Caithness on the notes and writings of Mr. H. Osborne, we think this a fitting opportunity to give some slight sketch of his life and surroundings, and for these particulars we are indebted to Mr. James Couper of the *John o'Groat Journal* office.

Henry Osborne was born at Wick in 1837. He was the eldest son of Mr. Henry Osborne, for many years Governor of Wick Prison, and from him he seems to have inherited his love for birds, as Mr. Osborne, sen., was in the habit of having tame birds within the prison walls, amongst others being several grouse, a pair of which brought out a covey of young. Possessed of great natural talents and literary ability, and gifted with a rare faculty of observation, his ardent love of nature led him deeply into the study of natural history, ornithology being his favourite branch. Although his notes have never before been published, yet under the signature " H. O." he was a frequent contributor to both the *Field* and *Land and Water;* and his notes and remarks were always of value, as they were the result of personal observation. He was essentially a field naturalist, and some of his notes, especially one relating to the Waxwing, are full of freshness and originality. He also occasionally contributed articles on literary and natural-history subjects to the periodical press, giving the gracefully told results of his observations. Among the last articles he wrote, before his final illness compelled him to drop his pen, was a review for the *Scotsman* of Tegetmeier's work on Pigeons. In the ornithology of his native county he was specially at home, and he added several new species to the Caithness Fauna.

For fully seven years he struggled with a malady that baffled all medical skill, yet he bore up bravely under it, his active intel-

lect being ever at work, even whilst enduring severe pain and prostration. Having served his apprenticeship as a compositor in the *John o'Groat Journal* office, he was for some time in that of the *Scotsman*, until his health failed; and subsequently, between intervals of prostration, he conducted a weekly newspaper in Dingwall, and tried again the more exacting labour of a daily newspaper in the *Guardian* office in Manchester; but the disease returned, and for months he was unable to bear the journey home. For nearly three years he was confined to his room, and for upwards of two years entirely to his bed; but his interest in his favourite studies never flagged till the last, when his bodily weakness became so extreme.

His principal work, written partly, if not entirely, while confined to his room, was a general history of British Birds, more especially with reference to Caithness, and this it is which we have used as a basis for our Fauna of that county, as the manuscript was never published in its entirety, and for many years remained in the possession of his father. Mr. Osborne was singularly modest and retiring in his disposition, although his worth was fully appreciated by those who knew him. He died in 1868, at the early age of thirty-one.

GEOGRAPHICAL POSITION AND IMPORTANCE OF SUTHERLAND, CAITHNESS, AND WEST CROMARTY.

The counties of Sutherland and Caithness, the most northerly of the mainland of Scotland, possess a very extensive coast-line, together being more than three parts surrounded by sea, Sutherland itself having a sea-board of at least two-thirds of its total circumference. They are bounded on the west by the more northern portion of the Great Minch,—the channel that lies between the mainland and the Outer Hebrides,—a rich and comparatively unworked area of the great Stornoway herring-fishery. On the north and north-west the broad Atlantic laves its great cliffs and headlands, a few solitary islets alone intervening, such as North Rona and Souliskeir. The eastern shores are washed by the waters of the North Sea, until the south-east corner is reached at Dornoch, and here the southern coast is bounded by the still waters of the Dornoch Firth, and Kyle of Sutherland.

The whole of this coast-line teems with fish, a vast mine of wealth almost untouched on the west side; but the want of good and sufficient harbour- and pier-accommodation, in many places prevents the proper development of these fisheries.

Following the boundaries at the head of the Dornoch Firth in the south, comes the Kyle of Sutherland, which latter stretches its tidal waters inland to a little beyond the mouth of the river Cassley. Proceeding westward, the river Oykel resumes the office of the Kyle, and for some ten miles, between Rosehall and Oykel

Bridge, separates this county from Ross-shire on the south. All along this boundary line, and upon the northern bank of the Kyle and river, runs the high road between Bonar Bridge on the Dornoch Firth, and Oykel Bridge on the river of that name. Between Oykel Bridge and Altnagealgach the high road crosses over a peninsular portion of Ross-shire, which abuts upon the previous line of the county march, and here the boundary, following the Oykel river to Loch Ailsh, runs up to near Coinnebheal, turning southward along the top of Braebag and out at Altnagealgach, the high road again entering Sutherland at this point. At Altnagealgach the march commences on the south side of Loch Borrolan, and includes the whole of the watershed of that loch to the top of the Cromalt hills; the chain of lochs of which Veyattie and Fewn are the chief, and the river Kirkaig, the latter continuing down to the sea, and separating Sutherland from the county of Cromarty, which here approaches it on the south. If, as we now intend to do, we include West Cromarty, we locate its importance by continuing the Faunal boundary between "Moray" and "West Ross," to a point near to Ullapool, the whole being to the southward of the river Kirkaig, and northward of Loch Broom.

The total area of Sutherland, excluding water-areas, is put down by the Ordnance Survey at 1,297,848 acres. In addition to this are the areas of fresh water contained within its boundaries, amounting to 47,631 acres or thereby; foreshore occupies 12,812 acres, and tidal waters 1553 acres, or a total area of the whole districts under our consideration of 1,359,845 acres, or about 2124 square miles.[1]

Of the land area 260,765 acres, or about 407 square miles, are occupied by waste or non-arable land, composed of mountain or moorland, sheep-farm and deer-forest, or "links" of sand, such as those between the Dornoch Firth and Dunrobin. Arable land

[1] This is more correct than the areas given in 1820 by Mr. Loch, the Duke's factor, as at that time the county of Sutherland had never been surveyed. (See *An Account of the Improvements*, etc. etc., by James Loch, Esquire, 1820, p. 15.) And the same remark applies if we compare these figures with those given in the *Agricultural Account of Caithness*, the title of which we have quoted.

occupies 31,787 acres, or about 60 square miles, including the improved lands at Lairg and in the parish of Kildonan, and the south-east shore of Loch Shin, as well as the scattered plots of crofters' possessions here and there over the county, besides others of the less important areas.

Of the fresh-water area, the largest body of water is Loch Shin, being 18 miles in length, and having an average width of one to one and a half miles. This great lake forms an almost continuous canal-way, along with Lochs Griam, Merkland, More, and Stack, between Lairg at the south-east end of Loch Shin and Laxford Loch on the west coast, interrupted only by the watershed, of comparatively low altitude, between Loch Merkland and Loch More. Other large sheets of water, all holding salmon, or sea-trout, or trout and char, are Lochs Naver, Laoghal, and Hope, in the north, connecting with the Pentland Firth; Lochs Assynt, Cama, Veyatie, Fewn, and Urigill; and Lochs Stack and More before mentioned. In the east centre are the large lochs, Badenloch, Loch-na-Clar, and Rimisdale, or Loch-na-Cuen, out of which flows the Helmsdale river; and in the south-east is Loch Brora, through which flows the river of the same name, both it and the Helmsdale running into the German Ocean. Besides these larger reservoirs of water there are innumerable lochs, lochans, and tarns of smaller area, especially numerous in the western districts of the county.

Besides the above, we have a wooded area of natural birch-wood or planted ground, amounting in all, approximately, to 7296 acres, or about 11 square miles. By far the greatest part of this area is in the south-east, between Dunrobin and the Dornoch Firth, and, though somewhat reduced of late, the woods around Rosehall: also those on the eastern bank of the river Oykel, and again at Tongue in the north and Loch Inver in the west. Even this comparatively small area of wood has a great influence on the fauna and flora. The above figures refer in most part to the last ascertained areas in Mr. M'Donald's paper in *The Highland and Agricultural Society's Transactions* for 1880. It would appear that in 1853 the woodland acreage was 10,812, and in 1872 it had been

reduced to 7296. Since 1872 it is probable that the wooded area has again been increased to 10,000 acres to date of 1883.

The exact areas of West Cromarty, as separate from Ross-shire, are not so easily given, as they do not appear separately in any of the returns to which we have access; and so scattered, indeed, are many smaller portions of this county, that it seems much better to include their areas along with those of Ross-shire upon another occasion, which we trust may be soon afforded us.

Taking Caithness in the same order, we find the total area of the county—including water areas, fresh and tidal—is quoted from the Ordnance Survey as 448,867 acres.[1] Of this total, 438,878 acres are land, 7271 acres are water (both tidal and fresh water being included), and the comparatively small area of 2718 acres are foreshore. The latter small proportion is of course due to the almost uniformly precipitous and rock-bound nature of the coast-line, there being but few sandy bays or inlets of importance.

Of the land area of 438,878 acres, or about 685 square miles, the large proportion of 106,413 acres, or about 116 square miles—which includes all permanent pasture ground, exclusive of mountain land—is under cultivation. Only the insignificant area of 214 acres is under wood; and by far the largest portion of this is situated in the narrow glens of Berriedale and Langwell in the extreme S.E. of the county.[2] Deducting these several areas from the full total of land area of 438,878 acres as above, we find the vast balance of 182,106 acres, or 284 square miles, of barren ground or mountain, 'flow,' sterile muir, and rock, by far the largest and least productive portion of which lies in the centre and south of the county, around the sources of the Thurso river, and of the

[1] The *Encyclopædia Britannica* says 455,708 acres, or 712 square miles. In estimating the above areas we do not consider the earlier estimates taken at the time of the Agricultural Survey of 1815.

[2] At Brawl, trees were planted by Sir John Sinclair's grandfather. In 1815 it was an "old plantation." Two "Mountain Ash Trees" at that time were eighty years old (Agricultural Survey, 1815).

Berriedale, Langwell, and Dunbeath Rivers. Grouse and deer inhabit these natural unreclaimed lands; but there are few sheep, as compared with other sheep-grazing areas.[1]

The physical features of our Highland counties are often indicated by the appropriate Gaelic names, usually descriptive of mountains, lochs, rivers, headlands, vales, valleys, rocks, and islands. In Sutherlandshire, Scourie means the pointed rock; Stoir, the high-peaked cliff; Meallmeadhonach, the middle or central hill; Ben Chaoran, or Harran, a high ridge contiguous with Ben More, means the hill of the cloudberries; Glasbhein, the grey (*i.e.* stony) hill. So also Loch Gorm means the blue loch; Loch Griam, the loch of the sun; Loch-an-Hard, the high-lying loch; Loch Clashmore, the loch of the great hollow; and so on. It has often seemed to us desirable that some good Gaelic scholar should work out all these interesting Gaelic names, and tabulate them for each county, with their correct meanings: and we believe that Mr. Mackay of Portnacon could largely contribute towards such a desideratum for Sutherland. In Caithness, in the same way, the distribution of Gaelic names of places is still considerable. It is shown in the north as far east as Reay, and, extending southward, embraces all the great flowlands of the centre of the county, and reaches quite close to the coast in the extreme south-east of the county, where the mountains of Berriedale and the Ord, for the most part, retain their original Gaelic names.

Scandinavian names are sparsely distributed amongst the Gaelic names west of Reay, but largely increase, to the almost total exclusion of Gaelic names, to the east, occupying the whole of the great north-east peninsula, and the cultivated districts of the east coast, but becoming rarer in the extreme south-east.

The names of mountains, and of most lochs, and the upper

[1] By the agricultural returns of 1884 there were 97,737 sheep of all ages in the county of Caithness, as compared with Shetland, 84,003; Fife, 88,529, and nineteen counties running from 114,292 (Stirling) to 709,471 (Inverness) and 987,425 (Argyll). Vide *Trans. Highland and Agricultural Society of Scotland*, 1884, pp. 332 *et seq.*

reaches of rivers, usually retain their Gaelic names, whilst eminences in the north-east, a few lakes, and lower stretches of rivers, and homesteads, villages, and towns, bear no trace of that language in their composition.

The comparative distribution of Gaelic and Scandinavian names in the county may more shortly be expressed thus:—Gaelic occupies in the sheets of the late Ordnance Survey—on the one inch to the mile scale—almost absolute supremacy in No. 109 in the south-west; more than half of sheet 110 in the south-east; by far the larger portion of 115 in the north; but only a very inferior area in No. 116 in the north-east.

Scandinavian names are supreme in sheet 116; in a great minority in No. 115; occupying the coastward half of No. 110; and almost utterly disappearing in No. 109.

In close connection with the geographical position of these counties and their geographical value, so to speak, and closely related to the statistics already quoted and compiled from the agricultural returns, we find yet another comparison of value in treating of faunal areas. All these geographical data are of value in investigating natural faunas or floras, and ought not to be passed by. What we allude to at present are the measurements of drainage areas of the rivers and their principal tributaries. Not only are these useful, and indeed necessary, to our Salmon Commissioners, but they are interesting and valuable to the student of Nature in almost any branch. A description of our great dividing ranges of mountains, giving minute particulars of their physical aspects—geological and orographical—and illustrating their botany, would be of infinite value for many scientific purposes, and would define the great natural drainage basins of Great Britain. The materials for this must undoubtedly be in the possession of such men as Mr. Colin Phillip or Professor Heddle of St. Andrews, and of the members of the Geological and Ordnance Surveys, but have not yet been made accessible to the general public. Further, when the great dividing ranges, through all their sinuous courses, have been clearly treated of, there remain the great basins, the courses of their rivers, the foot-hills, and woodlands, and other

areas, to be described with an intelligent appreciation of their part in the great plan of creation. Nor does the work of the geographer or the naturalist cease here, for we have still the coast-lines, and we have still the wonders which lie beneath and around in every branch of science. Topography and place-names claim no inconsiderable share of attention; yet if we look around, how few works have ever treated of this mine of wealth. Let no one say our knowledge of our own country is nearly yet complete.

To return to Caithness: the principal rivers of Caithness are in order of importance as regards their drainage areas:—The Thurso draining 162 square miles; the Wick draining 104 square miles; Langwell and Berriedale draining 72 square miles; Forss draining 58 square miles; and Dunbeath with a drainage area of 23 square miles.[1]

[1] Third Report of the Fishery Board for Scotland, p. 171. There is also an excellent and useful map in this Report "showing the salmon fishery districts in Scotland," and indicating the watersheds and river-basins of all the principal rivers.

DESCRIPTION OF THE PHYSICAL FEATURES OF SUTHERLAND AND CAITHNESS.

EASTERN DIVISION OF SUTHERLAND.

On the north coast, and east from the Kyle of Tongue, the shore gradually rises, and *ex adverso* of this part are small green islands, lying not far from the mainland, principal among which is the island of Roan, which is inhabited. At Naver Bay there is a considerable extent of flat sandy coast, the only bit of any size of the kind until Sandside, on the Caithness side of the county boundary, is reached. From here the coast-line becomes bold and rocky, with vertical headlands of considerable height, such as Skerra and Strathy Points, and occasionally indented by small sandy bays of no great size, again getting lower, flatter, and of a more sandy character as the county of Caithness is approached.

The eastern coast-line of Sutherland consists mostly of sand-hills, stretching from Port Gower in the north to the Dornoch Firth in the south. The hills, which from the Ord to Helmsdale rise close to the sea, after passing the latter place begin to recede further and further inland, thus leaving an intervening flat, varying from one to two miles in breadth, which is mostly under cultivation; in two places—Dunrobin and the Little Ferry—woods take the place of fields, which here come down to the sea. At several points along this line rocks crop up, which resist to a certain extent the ravages of the sea, though the latter is encroaching in some places very rapidly.

The whole of this eastern sea-board, which is rather more than twenty-five miles in extent, presents but little variety, the sand-hills, which commence on the southern side of the Helmsdale

river, continuing with little intermission to the Dornoch Firth. The beach affords a convenient nesting-place to such birds as the common tern, oyster-catcher, and ringed plover; and sheldrakes breed in the rabbit-burrows in the sandhills. Wherever there are sandy cliffs high enough to afford a secure nesting-place, jackdaws build in numbers, and these do great havoc amongst the eggs of the terns and oyster-catchers.

Certain rocks which are bare at half-tide are frequented by seals, mostly the Grey seal (*Halichœrus gryphus*), the Firth seal (*Phoca vitulina*) being less common along the open shore, though very abundant both in the Dornoch Firth and at the Little Ferry. On one occasion the Harp seal (*Phoca Greenlandica*) was shot by Mr. Houstoun of Kintradwell, but its value not being sufficiently known, only the skin was preserved, and this was afterwards cut up for various purposes.

The wave of migration seems almost entirely to leave the Sutherland coast untouched, and this may account for the very small numbers of migratory waders that are to be seen, even in such an apparently favourable locality as the Little Ferry. A few bar-tailed godwits appear now and then, but even dunlins are scarce; the mussel-scalps attract great numbers of oyster-catchers; and in hard weather a good many golden plovers, driven off the hills, come down to the shores. The only grey plover known to have occurred on this part of the coast was shot near Kintradwell amongst some rocks, and was quite alone. These patches of rock are a favourite resort of purple sandpipers, redshanks, and a few turnstones, though the latter often keep in small flocks by themselves.

Leaving the coast-line, we next come to the cultivated district which lies between the sandhills and the rising ground. This presents but little interest, excepting that the quail has been found nesting on one or two occasions near Brora and also near Dornoch, as recorded by Sheriff Mackenzie. The wooded district which occupies a portion of the same area, and extends also higher up the rising ground, is of considerable importance.

It may be as well to mention that there are few pine-trees of any great antiquity in Sutherland, the oldest known to us, and

which we have every reason to believe are natural, and not planted, are situated on a hill near Rosehall on the way to Oykel Bridge.[1] Next in age, and which are known to have been planted, are those at Kilcalmkill or Gordonbush, and Kintradwell; they were probably planted about the same time. The great extent of country now under trees has all been planted within the last sixty or seventy years. Such an extent of newly planted ground, for so long a time barren, must, and indeed now does, exercise a decided influence on the fauna of the county. On the densely wooded side of Ben Bhraggie the badger exists:—one of the few remaining places in the county still frequented by it, though formerly they were apparently common. The siskin nests here too, and doubtless the crossbill also, though the only place where the latter is known to do so with certainty is in the Balblair Wood at the Little Ferry. In the Uppat Woods a female honey buzzard was shot in July, which might well have been breeding, though no nest has, so far, actually been discovered.

The greatest extent of wooded country lies in the parishes of Dornoch, Creich, and Golspie, though almost every parish possesses some newly planted ground; and should the latter prove a success, no doubt still more land will be thus treated: every strath, too, possesses some natural birch; of little value, however, except to give shelter to game and sheep, but all having influence on the bird-life of the district.

In mentioning the cultivated districts, no account has been taken of the large tract of country ploughed up and reclaimed by the Duke of Sutherland in the parish of Kildonan, but as yet this has had comparatively little effect upon the fauna of that district. We understand, however, that plantations have been laid out there, and there can be no manner of doubt that, should the trees thrive, a few years will see a marked change in many forms of life.

In the north and south-west of this district no hills of any importance occur, but in the central districts the country assumes a different character. Entering Sutherland from the Caithness

[1] Since this was written we have learned that these trees were also planted. Still, they are the oldest known to us in Sutherland.

side, we find high ground all along the south-eastern part of the march dividing the two counties, one of the highest points being Cnoc-na-neranach, or "The Irishman," as it is generally called, and we have on the same range an altitude of over 1300 feet close to the sea above Helmsdale. Most striking of all are the two Bens Griam, rising as they do in solid masses, straight from the wet flat moorland that characterises that part of the county, giving them an appearance of height greater than that they actually possess, which in itself is considerable, being close on 2000 feet. At one time both these hills and "The Irishman," before mentioned, were inhabited by ptarmigan, but they have now been extinct there for some years, though as late as 1881 a single ptarmigan was shot on some flow-ground near the first-mentioned hills, and a bird, probably the same, had been seen on one of them during the previous season.

South-west of the Bens Griam, and second highest of the Sutherland hills, is Ben Clibrick, 3164 feet. From its rounded shape it does not convey the idea of grandeur and height possessed by many smaller hills, which have more rugged and rocky outlines. It is haunted by every bird and beast that is dear to the Highland sportsman and naturalist, and was at one time one of the best, if not *the* best, hill for ptarmigan in the county. Within a few feet of the top is a spring of the coldest water. At the foot of its eastern slope is Loch Choire, the head-waters of the Mallert (Mheal aird[1]) river, one of the principal feeders of the Naver. Looking towards the east, from Loch Choire, the rounded group of hills that form Ben Armine rise, terminating in two high tops, Craigmore and Craigbeg, the former being 2306 feet in height. Ptarmigan here are fast dying out, very few being seen now. The eastern side is fairly precipitous, and is at times haunted by a pair of golden eagles, which birds are strictly preserved by the lessee of the shootings; the western side is well wooded on its lower slopes, especially about Coir-na-fearn, a very favourite resort of deer. Stretching all round on the east and north are vast tracts

[1] In Ordnance Survey Map—inch scale—this is given "Abhainn a Mhail Aird," correctly Abhuin a Mheal Aird.

of wet flow-ground, intersected by burns which fall wholly into the Brora river, or rather that branch of it which is called the Blackwater.

The other hills of importance are, Ben Uarie, 1923 feet, and Ben a Veallich, 1936 feet, in the parishes of Loth and Kildonan; Ben Smeorale, 1667 feet, and Ben Horn, 1712, both in the parish of Clyne; and Ben Bhraggie, in the parish of Golspie, 1282 feet. None of these hills present that rugged, wild, and rocky appearance that characterises those in the west; they are for the most part smooth and rounded, the higher ones in the centre of the county covered towards the top with a coarse grass, which shows a vivid green in the sunlight; the others, nearer the south and the east, have heather growing up to their summits, which gets coarser and more stunted the higher it ascends. In some places, where the ground is sufficiently wet, what is called "deer's hair" grass appears, but this is more characteristic of the low, wet flow-grounds.

Although we have only mentioned the principal hills, it must not be understood that the rest of the county is quite flat,—far from it: the whole of the south-eastern part, extending along the Caithness march, and from the sea to the centre of the county, consists of moderately high hilly ground, highest near the sea, and gradually lowering in height inland until it ends in those large lochs and flat wet flows out of which the principal rivers of the county rise. This ground contains the most productive grouse-moors of Sutherland, some of them rivalling the best that Perthshire or Inverness-shire can show, though of late years disease, from which they are still suffering, has made sad havoc amongst the birds.

We have mentioned the word "flow" several times. A flow is a wet tract of ground, generally flat, though such can exist on a gentle slope where there has been no artificial drainage: this is covered by a short kind of grass, which in autumn assumes nearly the colour of a red-deer, hence its trivial name "deer's-hair grass." Scattered through this tract are small ponds, locally called "brulochans," some deep, others shallow; in the former a pair of red-

throated divers may often be seen, and their nest found close to the edge; nor are they particular as to the size of the lochans, as we have seen them in one not more than 25 yards long by about 15 broad. In the shallow pools, great bunches of the pretty "cotton grass" grow, and plants of it are also scattered all through the flow district. This grass, which is locally termed by the shepherds "mossing," is of great importance to the sheep-farmers, because, being the first grass that starts up in spring, it is of great service in helping the sheep to get into condition after the long winter. These flows are here and there intersected by deep, black, peaty water-courses, and these lead into the sluggish burns (whose edges are covered with good grass), which in turn meander lazily along, until, as they approach their outlets, they gain more rapidity and vigour. In the drier parts of the flow, heather grows, much intermixed with reindeer moss and different sorts of lichens. Grouse inhabit the drier places, and on the bare hillocks the golden plovers have their nests. Gulls of different species breed on the flows, but, owing to incessant persecution, are much rarer than formerly (*i.e.* those that are destructive to game or sheep), such as the herring gull and the great and lesser black-backed gulls. If, in any of these larger "brulochans" we find a particularly boggy island, almost inaccessible, owing to deep mud and shallow water, there is often a colony of black-headed gulls nesting, and a pair or two of ducks, teal, widgeon, or, less commonly, coots. The wet flows themselves are the abode of the dunlin; and the wild-goose, though much rarer now than formerly, places her nest in a dry tuft of heather.

The greatest flow district is situated in the northern part of the parishes of Kildonan and Clyne, the central part of the parish of Farr, and the southern part of the parish of Reay, the ground getting drier by the drainage of the rivers of these districts as we approach the coast.

Having now given a general outline of the physical features of the land of our eastern division, we come next to speak of the rivers and lochs.

The rivers included present in most cases a very different

appearance from those of the west, being of a less wild and rapid character, and also less rocky, except in their middle reaches. The Shin, however, is an exception to the rule, being rocky throughout nearly the whole of its course. All the early spring salmon rivers lie in the eastern and northern districts; the Naver, which issues from Loch Naver, drains the greater part of the parish of Farr, and falls into the sea on the north side of the county; the Helmsdale, which issues from the large lochs in the centre of the county, drains the parish of Kildonan, and falls into the sea on the east coast; as does also the Brora, which drains the greater part of the parishes of Clyne and Rogart; and the Shin, before mentioned, issuing from Loch Shin, which drains the parish of Lairg and falls into the Kyle of Sutherland. These four all contain early spring salmon. The next of importance is the Halladale, which drains the parish of Reay, and runs into the Pentland Firth.

The parishes of Dornoch and Creich possess no rivers worthy of the name, the Evelix being the most important, and after that the Carnack, which runs into the Fleet, near its mouth.

There are two small rivers,—one indeed no more than a large burn,—which deserve a little notice. The first, the Lothbeg Burn, has a course of only some six miles, but it drains the wildest district in the whole of the east of Sutherland. Rising in the Meallanlia hills, it runs through the ancient forest of Sletal, hills rising on each side almost perpendicularly. The celebrated Sletal cairn is situated in this glen, the scene of the death of the last Sutherland wolf, and possibly the last stronghold of the wild-cat in this part of the county, if such an animal exists here at all. The river enters the sea through an artificial cutting over which the railway now passes, but at one time it flowed into a marsh, which is now one of the best cultivated farms in the county. This drainage was effected by one of the present Duke's ancestors, who thus reclaimed a large extent of valuable land.

The other river is the Fleet, very sluggish in its lower reaches, and a great resort of sea-trout. At the mouth of the river, and going through the marsh that lies to the south side of it, runs the high-

road to Dornoch, artificially raised above the sea-level; hence its name, the "Mound." The mound was erected to keep the sea from the low-lying grounds immediately inland, and sluices are placed at the mouth of the river to allow the surplus water to run off at low tide. The low-lying ground is covered with alders and long grass, and is the best place in the county for wild-fowl, as they have the estuary of the Little Ferry,—the only place of the kind entirely in the county,—to resort to when disturbed inland, and *vice versâ*.

Lochs are not nearly so numerous in the east as in the west of the county, but still there are some magnificent sheets of water. Perhaps Loch Naver and Loch Brora bear off the palm for beauty, as their banks, and the slopes of the hills adjoining, are partially covered with trees; and, on the latter at least, bird-life is abundant. At the head of Loch Brora is a marsh where we have seen as many as thirty widgeon drakes together, and this in the breeding season.

The lochs in the centre of the district, desolate though they at first appear, have a wild beauty of their own. Badenloch, Loch-na-Clar, and Loch Rimisdale or Loch-na-Cuen, lie close together, the two first in fact running into one another, being only partly separated by a narrow spit of sand, which terminates in a heathery hillock. On this spit of sand, in former times, was situated a manufactory of flint arrows and spear-heads; and flakes of flint and chert are yet to be seen, together with the remains of ancient fires; in the long heather that fringes this hillock the reed-bunting places its nest for want of a better site, and round the gravelly and sandy shores of the loch the ringed plover lays her eggs.

This chain of lochs is the gathering-ground for the remnant of wild-geese that remain to breed in the district, but these birds are decreasing yearly from some unknown cause, as they are now never shot, as used to be the case in former years, when as many as seventy, young and old, were sometimes killed in a single day.

Other lochs worthy of note are, Loch-an-Ruair and Liam-na-chlaven, in the northern part of Kildonan parish, Loch Choire,

in the southern part of Farr parish, and Loch Migdale, in the parish of Creich, this latter remarkable as being the only loch containing pike in the county.

WESTERN AND NORTHERN PORTIONS.

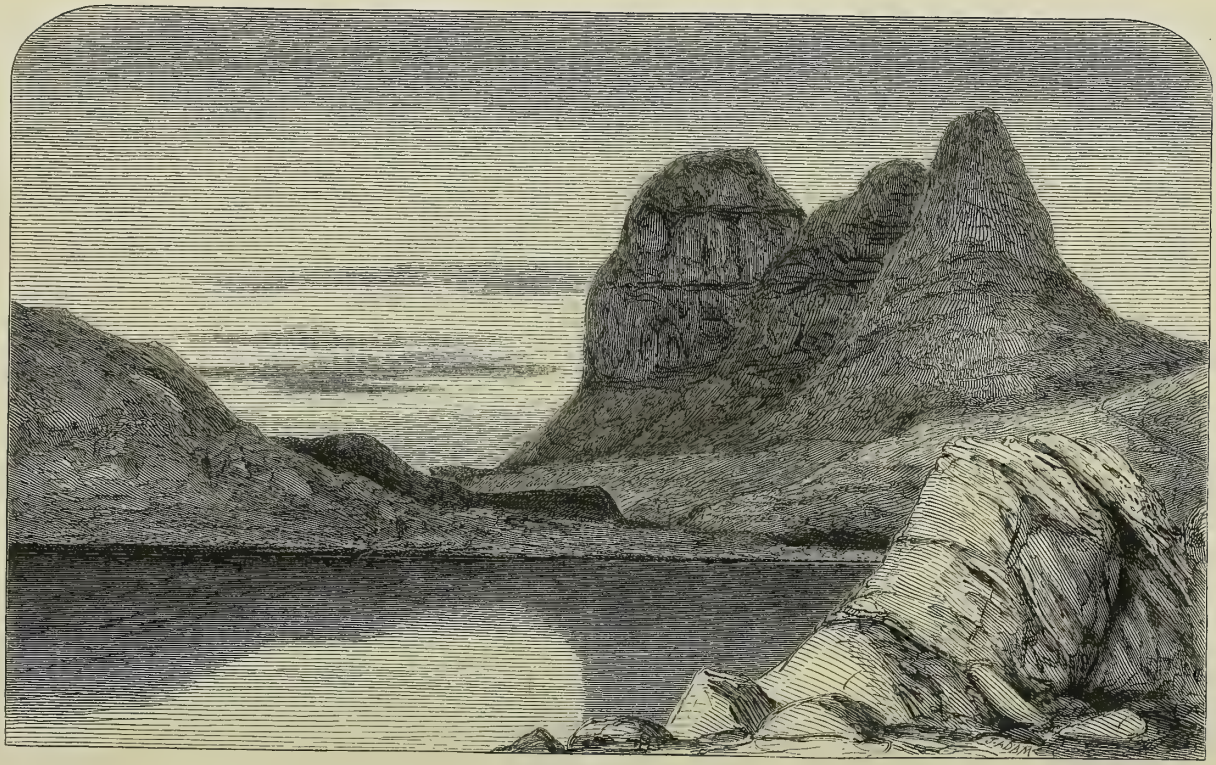
Mountains.

The great divide or backbone of Sutherland stretches northward from near the southern boundary, in the south-west of the county, to the limits in the north, of the Reay Forest, and then turns eastward by Ben Hope and the head-waters of the rivers running northwards to the Pentland Firth, terminating about the centre of the Caithness march.

The panorama of mountains opening up to view as the traveller approaches from the east by the mail road between Lairg and Assynt is not perhaps equalled in peculiarity of outline by any other in Scotland, although it may be excelled in grandeur by the almost Norwegian vastness of Coruisk in Skye, or the Romsdalhorn similitude of the great mountains at the head of the narrow Loch Duich in Ross-shire.

Beginning in the south, we will mention the strange isolated mountains of West Cromarty and Assynt, which meet the astonished gaze of the westward-bound traveller who for the first time penetrates among these further Highlands of Scotland. First, far to the southwards, from certain points of view is seen Ben Mohr Coigach (2438), with its peculiar hog's-back or sierra-like ridge; Stack Polly (2009), with its splintered pinnacles of conglomerate; the rounded lumps and cones of Bens Coul Beg (2523) and Coul More (2786); the extraordinary terraced cliffs and sugar-loaf peaks of Sulbhein (2399); and the massive, far-receding slope and summit of Canisp (2779); with, lastly, the magnificent yet isolated range of Quinaig, whose numerous peaks reach elevations of from 2508 feet to 2653 feet.

If we add, therefore, to our present account a consideration of the comparatively small area of West Cromarty we have only in this place very shortly to mention its chief peculiarities, and notice



Suilbhein, Sutherland.

the continuation of the watershed between "West Ross" and "Moray," as far south as Ullapool. In describing the marches of the faunal areas north of the county march between West Cromarty and Sutherland, we have begun at the southern county boundary, and proceeded northward. But in describing the backbone of hills to the southward of the same, which lies between the Cromalt hills and along the Kirkaig river, we will begin in the north and proceed southward for purposes which will become clearer at another opportunity. From the Cromalt hills, and at the ascent and descent of the Cromarty and Assynt road to the south of Elphin village, the faunal boundary rounds the head-waters of the Einaig river, which runs easterly to the Oykel at Oykel Bridge, with a course throughout entirely within the county of Ross and area of "Moray." It then rounds the upper sources of Glendouchary and the Ullapool river, which, with a comparatively short course, runs westward, and falls into Loch Broom, near Ullapool.

We have above mentioned the principal mountains of West Cromarty. Principal amongst the lochs of West Cromarty is Loch Sheanaskaig. It is a lovely loch, and holds several birch-clad islands. Harvie-Brown can well remember spending twenty-five hours upon the largest island many years ago, along with five others in the party, quite unable to get off owing to a strong north-easterly gale of wind and rain, having no oars, but only two rude sticks cut with pocket-knives from the trees on shore, with which, early in the morning of the first day, the party had paddled out during a dead calm. During this period they had no food except gulls, which, even with all their hunger, were scarcely acceptable to the palate and stomach; and their eggs, being hard incubated, were even less so; although since that time considerably incubated eggs of wild-fowl have been looked upon as invaluable as diet.[1] Many wild-fowl bred at that time on the islands. Gulls were in hundreds, and numerous greylag geese, but since then all have decreased in numbers, especially the geese, owing to persecution. Now that the large green island on Loch Sheanaskaig

[1] *i.e.* on a certain occasion, when one of the writers and a friend were short of food on the tundras of north-eastern Russia (v. Ibis, 1876).

has been kept quiet by the lessee of the adjoining shootings and deer forest of Inverpolly, there is perhaps some chance again of their increasing.

Besides Loch Sheanaskaig, there are many fine wild lochs in Coigeach or West Cromarty, famed for sporting purposes as well as varied and grand scenery. Among these we may mention Lochs Owskeich, Baddagyle, Lurgan, Raa, etc., imbedded amongst their weird mountain valleys. Off the coast are the Summer Islands, partly belonging to the county of Ross and partly to West Cromarty. Amongst these, the principal are Ristal and Mullachgrah Islands, Tannera More, Tannera Beg, and Glas-leag-mohr and Horse Island; and lying farther seaward, and to the southward are the outlying islands of Glas-leag-beg, Priest Island, Dubh Island and Bottle Island, of which perhaps the most curious is Priest Island, which we visited in 1884, and of which we have already written a somewhat full account, being a paper on "Priest Island and its Bird Life,"[1] and which perhaps ought more justly to be treated of when we come to consider the area of "West Ross and Skye."

Returning to the county march formed by the Kirkaig river, we find the attention attracted by the more continuous nature of the real backbone of hills; commencing in the south with Braebag (2044), rising rapidly upwards into the scarred and fretted face and summits of the huge Ben More, and its still bigger brother Coinneveal (Coinnemheall), 3273 and 3234 respectively, the highest peaks in Sutherland; then follow, in a bold, amphitheatric curve, Ben Chaoran (2500), Ben Uidhe (2384), and Glashbhein (2541).

Away to the north and north-west extends a perfect multitude of mountains, chief amongst which are those of the Reay Forest, stretching from Ben Stack in the west (2364) and Ben Hee (2864) in the east, north-eastwards to Ben Hope (3040), and including the isolated Ben Laoghal in the Tongue district (2504). To the northwest, and towards Cape Wrath, are Ben Arkle (2578), Foinnebhein (2980), Grann Stackach (2630), Ben Spionnaidh (2537), and

[1] *Transactions of Norfolk and Norwich Society*, April 1886.

Fashven (Fashbhein) (1504). The stony tops of most of these great mountains are granitic or quartzose, and, in the Reay Forest, of upper gneiss, covered with a soft carpeting of mosses and lichens on the summit-plateaux. Lower down the material is similar, but it is clothed in heather and grasses. The bases are of very similar formation, except where the great outcroppings of the Durness and Assynt limestones appear, as at Durness, and in the great cliffs of Stronchrubie, Knockan, and Elphin; or where, as in Ben Stack, the Hebridean gneiss occurs; or interspersed with the Torridon conglomerates, as in the case of Quinaig, Canisp, and Suilbhein.

The vegetation of the limestones, as might be expected, is singularly rich and luxuriant, producing amongst the excellent general sheep-pasturage some rare Scottish wild-flowers, such as Dryas octopetala and others.[1]

The marvellous springs of clearest and coldest water which

[1] Our thanks are due to Messrs. Lionel Hinxman and Ben. N. Peach, of the Geological Survey of Scotland, for the following list of plants found by them on the limestone islands of Eilean Hoan, the Skerries, and Eilean Garbh, in July 1883:—

Ranunculus acris, Cochlearia officinalis, Viola canina, Polygala vulgaris, Silene maritima, Arenaria serpylliflora, Cerastium triviale, Linum catharticum, Trifolium repens, Anthyllis vulneraria, Lotus colniculatus, Potentilla anserina, P. tormentilla, Dryas octopetala, Sedum rhodiola, Ligusticum scoticum, Heracleum sphondylium, Achillea millefiorium, Daucus carota, Galium verum, G. aparine, Knautia arvensis, Artemisia absinthium, Leontodon taraxacum, Antennaria dioica, Bellis perennis, Onopordium acanthium, Carduus arvensis, Hieracium (spec. ?), Calluna vulgaris, Erica cinerea, Gentiana campestris, Myosotis arvensis, Euphrasia officinalis, Thymus serypllum, Prunella vulgaris, Armeria maritima, Chenopodium album, Rumex pulcher, R. acetosella, Urtica dioica, Orchis maculata, Scilla verna, Luzula campestris, Juncus acutiflorus, Plantago coronopus, P. maritima, P. media. Besides the above flowering plants, these gentlemen also found the following grasses; and Asplenium marinum amongst the cryptogams:—

Grasses.—Anthoxanthum odoratum, Phleum arenarium, Alopecurus pratensis, Agrostis vulgaris, Holcus lanatus, Poa annua, P. pratensis, P. maritima, Cynosurus cristatus, Dactylis glomerata, Festuca ovina, Triticum acutum, Lolium perenne. Of all these plants and grasses, the following are found on Eilean Garbh: Cochlearia danica, Armeria maritima, Rumex (spec. ?), Atriplex hastata, Plantago maritima, and a thin maritime grass.

gush out of the Assynt limestone cliffs, the translucent, ultra-marine blue of the lakes near Durness, as well as the thick coating of lime incrusted upon the iron kettles and domestic pots and pans, not to speak of the delicious white-fleshed, crustacea-fed trout of the burns, all speak to the great beds of calcareous formation which underlie the gneiss, and crop out at various points in the west and north, and which, near the farm and shooting-box of Ledbeg, and again near Loch Alsh, harden and whiten into a very pure and white marble, long known and worked as Assynt marble.

This limestone is a very marked feature in the landscape, and a not unimportant factor in the zoological conditions. Amongst these clear streams there is a rich crustacean fauna and other lower forms of animal life. We consider that the limestone of Durness has even left its impress upon the Salmonidæ of its streams and lakes.

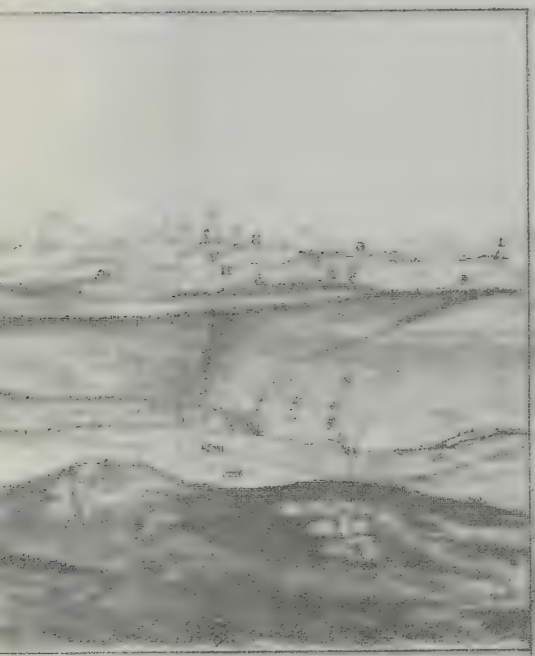
The wild and rugged scenery of the west of Sutherland is not however due entirely to the vast masses of mountain, nor even to their peculiar shapes and isolated positions, though undoubtedly these are very important factors. Besides the greater majesty of the hills, there are many wild and sinuous valleys and picturesquely-grouped combinations of lesser elevations, which introduce a charm which one might look for in vain if the hills stood alone in all their nakedness. There are wooded lakes and birch-clad hollows, heathery knolls and grey lichen-covered boulders, sparkling rivers and cascades; and there are the quaint, and quiet, and "bonny" peat-reek shealings, and closely-nestling crofts and cabins—abundant scope for the artist, who complains of the vastness of the subjects presented by the higher mountains and wider valleys.

Yet, again, we find bleak, water-sodden moors, with sedgy-margined lakes—the home of the dunlin and the golden plover, and haunted by the weird shriek of the rain-bird or red-throated diver (*Colymbus septentrionalis*),—but these are mostly confined to the south-west of our western district, and to the bleak upland moors of Durness and Cape Wrath, in which latter district they roll along with vast wavy undulations, like a heather-clad

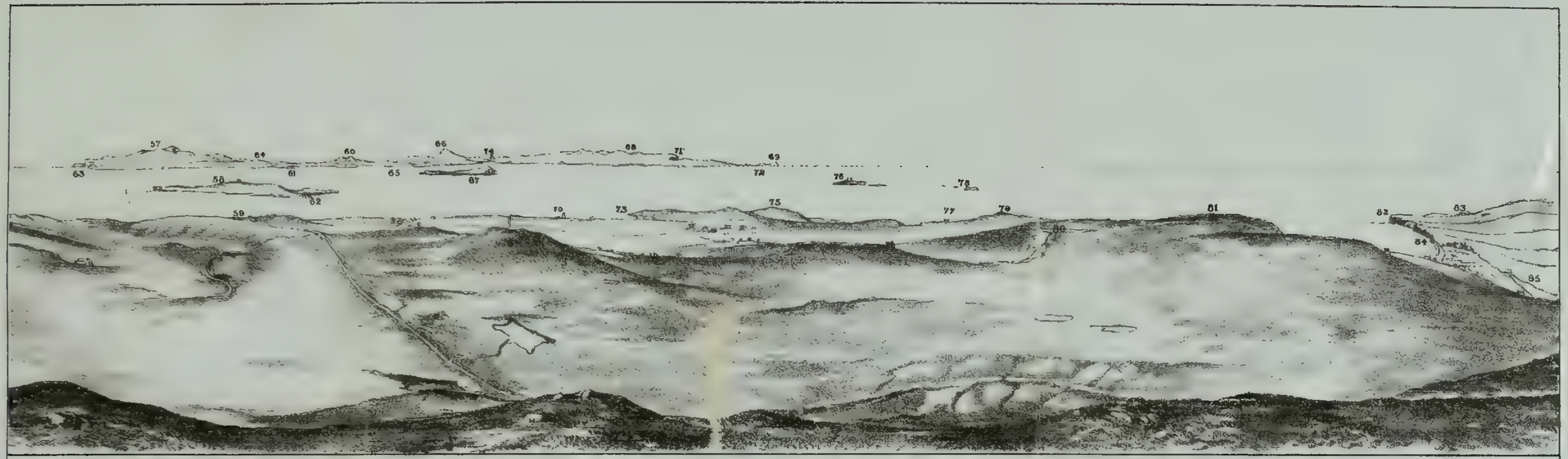


1 *Noss Head* 2 *Ackergill Tower* 3 *Nybster* 4. *Aukengill* 5. *Keiss* 6. *Wick* 7. *Yarrow Hills* 8. *Bruan* 9. *Ben Cheilt* 10. *Stircoke* 11. *Harland* 12. *Skerryben Hills* 13. *Maiden Pap* 14. *Smun* 15. *Ben Duan.* 16 *Morven.* 17. *Fin Ben* 18. *Ben Alisky* 19. *Ben More* 20. *Stemster Hill* 21. *Spittal Hill* 22. *Strath Begg* 23. *Strath More* 24. *Scouthal* 25. *Watten Strath* 26. *Cairn Heathercow* 27. *Freswick Moor* 28. *Bower* 29. *Flow of Freswick* 30. *Lyth* 31. *Ben Armine* 32 *Ben Klibreck* 33. *Ben Hu* 34. *Ben Dorrery* 35 *Ben Sh[illegible]rery* 36. *Ben Loval* 37. *Ben Hope* 38. *Betty Hill* 39. *Ben Ra* 40. *Sordal Hill.* 41 *Olrig Hill* 42. *Biel of Seater* 43. *Aiterwall* 44. *Bower* 45. *Halkirk* 46. *Castletown* 47. *Holborn Hd.* 48. *Dwarwick Hd.* 49. *Dunnet Hd.* 50 *Barrogill Ca.* 51. *St John's Pt.* 52. *Brebster-mire* 53. *Gills Bay* 54. *Men of Mey* 55. *Gur Hill* 56. *Thurso*

FROM WARTH HILL, LOOKING SOUTH.

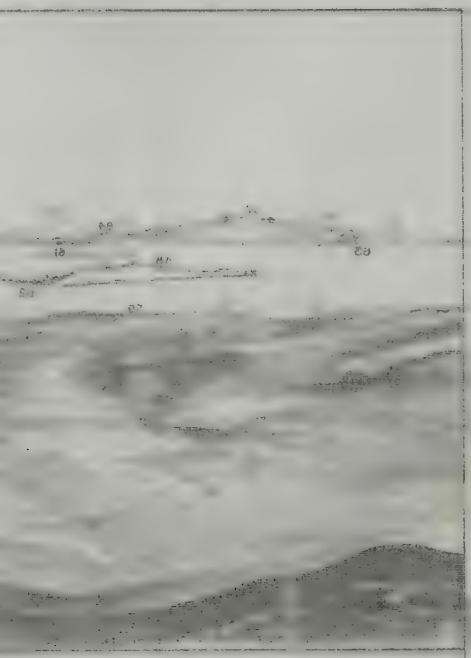


FROM WARTH HILL, LOOKING SOUTH.



57. *Island of Hoy* 58. *Island of Stroma* 59. *Huna Hotel* 60. *Orphir Hill* 61. *Cantick Hd.* 62. *Kermunk's Tomb* 63. *Turness Pt.* 64. *Stromness* 65. *I. Flotta* 66. *Wideford Hill* 67. *I. of Swona*
68. *So. Ronaldsha* 69. *Copinsha* 70. *John o' Groat's Ho.* 71. *Barth Hd.* 72. *Luthil Pt.* 73. *Bours of Duncansbay* 74. *Kirkwall* 75. *Duncansbay Hd.* 76. *Pentland Skerry* 77. *Stacks of Duncansbay* 78. *Little Skerry*
79. *Crogandale* 80. *Loch Lomashin* 81. *Black Hill* 82. *Gray Head* 83. *Buchollie Castle* 84. *Freswick Ho.* 85. *Burn of Freswick*

FROM WARTH HILL, LOOKING NORTH.



FROM WARTH HILL, LOOKING NORTH.

prairie, reminding one of an Arctic tundra more than any other part of Scotland we can recall to memory.

The marvellously broken and sinuous nature of the whole western land, and markedly of Assynt and Edderachyllis, affords many natural basins and resting-places for sheets of water of varying depths and areas.

Of inland valleys perhaps the most remarkable and the finest in aspect is the long narrow Glen Canisp, studded throughout its lower reaches with lovely smiling lakes and rivulets, but receding in darker grandeur towards the hills. The Pass of Stronchrubie and the approach to Loch Assynt by the base of the gigantic limestone cliffs,—where the holly-fern and the wall-rue flourish, and where great stems of ivy and holly find clinging-room and root-hold in their buttresses,—is also well worthy of the admiration of the traveller. The great pass also, by the lakes of the Reay Forest, between the head-waters of Loch Shin and the mouth of the river Laxford, is wild and grand in the extreme. Nor can we omit mention of the "Melancholy Strath of Dionard," ten long dark-shadowed miles of valley between the shooting-lodge of Gualin and the Kyle of Durness. When we first witnessed this dreary valley, and the snake-like course of its native stream—the Dionard or Grudie—we could not recall a weirder, wilder scene in Scotland, not even in the great moor of Rannoch in Perthshire, or the interminable moors of the eastern division of the county.

Inland Lochs and Rivers.

The parish of Assynt alone is said to hold over 300 lochs of various sizes. Edderachyllis is not far behind, but Durness is less honeycombed. These gems, set in the dark moorland or high on the shoulder of one of the monarchs of mountains, glisten and dance in the joy of summer sunshine, or fade and gleam more darkly in the winter rain and snow-drift. The variety of lovely scenery which is presented by the ever-shifting panorama of light and shade on mountain, mere, and river, during a drive on a fine day through Assynt and Edderachyllis, can scarcely be excelled by

anything in Scotland. Perhaps one of the very loveliest of the smaller lakes is Loch Beannoch,[1] near Loch Inver, but there are many that rival it in beauty. With the scarred and torrent-torn sides and towering form of Quinaig throughout its whole western range for a background, with a middle distance of lesser heights and tarn-holding hollows, and for the foreground Loch Beannoch, with its birch-clad, heron-inhabited islets and shore, with a rich-tinted gleam of western sunlight purpling the heights and reddening the débris slopes, and casting into shade the nearer outlines, one can scarcely imagine a more fairy-like scene. Or, if we choose the wilder beauties of Loch Assynt,—surrounded by ramparts of hills, and backed by the vast forms of the Assynt mountains,—its edges but partially clad in birch-wood, and its immediate shores precipitous and rocky, let us view it both in its quieter loveliness, but, best, in the wild grandeur of a storm, when masses of dark cloud roll rapidly across the stern outlines of the hills, and the unearthly shriek of the red-throated diver sounds like the last call of a drowning child.

Some of these lochs are margined by granite slopes and fed by springs of purest water, such as those on the higher ramparts of Ben More, and the great corries of Glasbhein and Ben Uidhe. These teem with the lower forms of life. Others at lower elevations are fed by the limestone burns, and these are full of crustacea; and yet others are fed by peaty. soft-tasted water, growing the yellow water-lily in abundance, covered with vegetable life, and rich also in water-insects and other zoological stores of wealth. By far the larger proportion of these lochs is inhabited by trout, some by salmon and sea-trout in season, and others by char, but some are, or have been originally, destitute of piscine life. Had we space we could dilate upon some of the extraordinary peculiarities of the inhabitants of certain others. Some remarks upon these will be found in their proper places when we treat of the fishes of our district.

Many of these lovely sheets of water are studded over with birch-clad islets, under the branches of which flourish the giant

[1] The Blessed Loch, or Loch of Blessings.

fronds of the great royal fern (*Osmunda regalis*). Other islets are heather-clad, a few grassy, and all are sown or planted by Nature's own hand only.

Nor is life absent here in the bright summer-time. The sweet plaintive song of the willow-warbler, the startling cry of the common sandpiper, the trill of the dunlin, the "Teoch-vingh" of the greenshank—from which this last species gets its Gaelic name—or the wail of the curlew, and the discontented chatter of the gulls, are ever constant to the ear. The heron builds her unshapely nest on birch-trees, only a few feet from the ground, and the hooded crow flies silently on predatory quest intent, whilst close to shore, off some green island in the centre, swims a black-throated diver, occasionally uttering his hoarse and guttural greeting to his mate, as she sits on her two dark olive eggs, only a few feet from the water's edge.

Principal amongst the lochs of Assynt and the west of Scotland for grandeur is Assynt; for its beauty Beannoch, near Loch Inver; and Loch Awe, near Inchnadamph, for quiet loveliness and loneliness; Loch Cama, near Aultnagealgach, for its grand background of hill and mountain, and its wood-clad islands; and Loch Urigill, also near Aultnagealgach, for the bleakness of its more immediate surroundings, and of the more distant Cromalt Hills, compared with its own vividly-green contrasts and innumerable water-fowl. There are many others, too numerous to name, but we must not omit mention of Loch Shin, a desolate and dreary expanse, narrow and ditch-like, but rich in piscine treasure; and Loch More, Loch Stack, Loch Merkland, and Loch Griam, all lovely in their own peculiarities of outline, foreground, and distance. High amongst the hills around Goberneasgach, in the Duke of Westminster's deer-forest, are some curious nooks and corners, and peculiar lakes, holding some strange varieties of trout. At Durness there are others, such as Loch Meadie, in the centre of a peat moor, giving birth to the Smoo Burn, which falls through the roof of the wondrous Smoo Cave, in the limestone of Durness; Loch Crassapuil, close to the Manse of Durness, with its bright clear sand, vivid green water, and silvery-sided trout most closely approaching

Salmo levenensis. Also Loch Borralaigh, with its char and subterranean outlet communicating with Loch Crassapuil below; and hundreds of others, scarcely one of which is not worth some passing notice, which, however, our space forbids us to enumerate. Yet we cannot pass by the strange little pools which perch high on the shoulder of Ben Hope, holding in their clear depths innumerable char of goodly size; nor can we omit to mention the drearier beauties of Loch Laoghal, Lochs Slam and Craggie near Tongue, nor of the many other lochlets which nestle near the base of Ben Laoghal.

Of the West Sutherland rivers our choice is the Inver. Wild and rugged, and headlong in its frantic efforts to reach the sea at Loch Inver, throughout its lower reaches, in its upper portions it is calm and smooth, wide and deep, expanding into little lochs and great ranges of salmon-spawning beds. It is fringed with birch, spruce, and fir—a lovely wooded ravine—in its lower reaches; but in its upper, save at the spot where it leaves Loch Assynt, is almost treeless. Thus it offers the finest combination of scenery of any river in the county. Next in loveliness is the Kirkaig, if not indeed in its own individualities, rivalling the Inver. Its magnificent waterfall, 68 feet in height, and the dark romantic pool below, its rugged, narrow, and tortuous course, and its uniformly-wooded sides, make it almost, if not quite, the equal in beauty of its sister stream. Then comes the Laxford, by its name suggestive of great and goodly store of salmon; and then the melancholy Strath of Dionard, near Durness. Savagely wild is the Dionard or Grudie in its upper reaches and at shingly-shored Loch Dionard; melancholy, dreary, and weird, throughout the last ten miles of its course, before it falls into the Kyle of Durness.

Of many minor streams we could recount their beauties and sing their praises, such as those of Trailigill and Loanan, and the marvellous cold-stream burn or Ault-an-oul, in the limestone of Assynt, or the wild tumbling burns of Glens Dhu and Coul—two glens, perhaps without their equal in scenic effect.

Sea-lochs and Shore-lines, Headlands and Stacks.

Scarcely less in importance are the innumerable and far-reaching sea-lochs, commencing in the south-west with Loch Kirkaig and Loch Inver, the long arms of Glen Dhu and Glen Coul, and including amongst their number, between those and Cape Wrath, Scourie Bay, Lochs Laxford and Inchard, and the sandy Loch Sandwood, all united by a wild and rugged coast-line, save at little isolated spots, where vegetation struggles hard to gain a foothold on the crofts of the inhabitants, or at others where bits of sandy soil intervene, forming smiling little coves and nooks, sunny warm spots in the midst of the gaunt precipices and rock-bound shores. The grandeur of the coast culminates in the island of Handa, of which we will speak later, and in the grand cliffs and stacks and headlands between Cape Wrath and Durness. Nor must we forget to mention the peculiar stacks or isolated pillars of rock of the "Old Man of Stoir," and that of the Buachaille or Shepherd near the entrance to Loch Sandwood, besides others we will speak of, around Handa, and on the north coast, whilst treating of the islands.

Sea Islands.

Intimately associated with these deep indentations and rugged coast-line, are the innumerable islands and groups of islands which stud the whole western seaboard, principal amongst which are the islands off Loch Inver, the Badcall Islands off Cairnbawn Loch (which at its head separates into the wild recesses of Lochs Dhu and Coul), and Handa, the stupendous cliffs of which, reaching 620 feet in altitude, give shelter to the countless sea-fowl which throng its step-and-stair-like ledges "at the height of the season," and which, for many years, also held the eyries of the white-tailed eagle and peregrine falcon. To the northward are more islands off Loch Inchard; and Bulgie Island, famous for the booming sound of the great Atlantic waves which dash wildly into the half-submerged cavern on its north-west side, and which is heard miles out at sea by sailors on board the passing ships. Along

the north coast are several islands, of which, perhaps, the most remarkable is that of Garbh, or the rough island, so named from the extremely hard nature of its limestone rock, and the excrescences or nodules of still harder lime fossils of crustacea, which, having resisted the action of air and water, jut out hard and unyielding from the almost equally impervious matrix. This island alone is well worthy of a visit, both by the botanist and the collector of fossil crustacea. Near Tongue, and off the entrance to the Kyle of Tongue, are Rhon Island and Rabbit Island, the former frequented by seals (*Phoca vitulina*), and the latter swarming with rabbits, and visited daily by eagles and other birds of prey which delight in rabbit flesh. Most of these islands are frequented by various sea-fowl, eider-ducks on the north coast, in small numbers, and gulls and terns, puffins and rock-birds; but in this respect Handa near Scourie stands pre-eminent, and is deserving of a few remarks apart from the rest.

Handa can most easily be visited from Scourie Bay, or, if the wind is too strong or unfavourable, by walking three miles to Tarbert, and thence taking a boat across the narrow sound which separates Handa from the mainland. There are many good sailors at Scourie and Tarbert, but the two who, perhaps, most fully fulfil the wants of a stranger by combining seamanship, fisher-lore, and cliff-climbing, are the brothers Donald and Peter Mathieson. Any one going to Handa should be amply provided with sea-fishing gear, because, round the cliff-base and along the shore, some of the finest sea-fishing can be had. We have assisted at the taking of $2\frac{1}{2}$ cwts. of lythe and coal-fish during a few hours, out from Scourie at five P.M. and back at eight or nine; and, in a single tide, a little further to the south, we have helped in taking over 600 lbs. of cod into one boat. When visiting Handa do not omit a judicious dram for the men, and if belonging to the army of the blue ribbon, some other substitute for one's-self, as Handa is not famed for the quality of its water.

Handa is a mile, more or less, in diameter, and nearly circular; slopes gradually towards the east or shoreward side, and where it is laved by the wavelets of the sheltered sound, the coast-line is



HANDA

interrupted by upright veins of trap, which form lovely little sandy coves for landing-places. A gradual slope leads upwards and westwards to the cliff edges, covered for a considerable space with short grass growing on sand, and producing sweet sheep-grazing and mushrooms. The cliff face occupies fully three-fourths of the circumference, low at the south and north-east; and, rising boldly and rapidly towards the west, culminates in a magnificent precipice of 620 feet in height. The sandy coves and trap dykes occupy the other fourth part of its coast-line. A flock of sheep is kept on the island, the grazing of which belongs to Mr. M'Iver, the Duke of Sutherland's factor at Scourie, and he used not infrequently to lose some of them, which, falling over the cliffs, were dashed to pieces on the rocks below, or drowned in the sea.

On the north side of Handa is a remarkable stack of rock, inaccessible, with flattish or sloping top, populated by a colony of great black-backed gulls, razorbills, guillemots, etc. Opposite is a deep scar or *göe* in the cliff face, down which a man can easily descend, populated by a large colony of puffins, which nestle amidst the grass slopes and loose masses of stones and débris. To the west of this is a projecting peninsula of cliff, over which, in certain winds, streams of rock-birds hurry up to their nesting-places on the stack. Further west the cliff rises rapidly in altitude, till, facing west, it reaches 620 feet in height; here the peregrine falcon breeds, and, till of late years, the white-tailed eagle reared her young. This is one of the grandest cliffs in Britain, and though hardly, perhaps, comparing in height with Foula in Shetland, Mingulay in the Hebrides, or St. Kilda, it comes little short of these in grandeur.

A little to the south of the culminating point of Handa, where the cliff dips suddenly to about 450 feet of elevation, there is a vast *creux* or pit, about 40 × 50 feet in surface area, being nearly perfectly square, unfenced when we last saw it, and penetrating perpendicularly the solid rock down to the sea-level, where it is connected with a deep inlet of the Western Ocean by an equilateral-sided tunnel.[1] This curious place is haunted by kittiwakes,

[1] The entrance to this is shown in our plate of Handa.

especially in stormy weather, but, save in the tunnel-way, where a few shags have their nests, is not used as a breeding station. We know of no creux to equal this in magnitude or grandeur, far surpassing as it does in both respects both those of the Channel Islands, and the Bullers of Buchan on the Aberdeenshire coast. Almost throughout the whole circumference of Handa—at least in its cliff faces—the wonderful regularity of its parallel ledges is remarkable; and its innumerable crevices are crammed with razorbills, guillemots, puffins, kittiwakes, and shags, whilst a few cormorants occupy the highest ledges just under the cliff-edge, and rock-doves are occasionally seen to dash out of the caves over the sea; rock-pipits and starlings are abundant in the crannies and among the sea-pink tufts of the cliffs. It is quite one of the most remarkable bird-nurseries of Great Britain.

The Badcall Islands are well worth a visit. Colonies of cormorants, sea-gulls, and black guillemots occupy the suitable positions. We have taken twenty to thirty eggs of the latter species during a short visit.

We have visited Handa and Badcall many times, Bulgie Island, and Garbh Island, and other islands off the coast, but none will compare in interest with Handa, and all visitors to Sutherland should make a point of including this wonderful island in the programme of their tour.

Plantations and Cultivated Areas.

The cultivated areas are few and far between, and for the most part insignificant. After leaving the vicinity of Rosehall and the Kyle of Sutherland, a few crofters' patches occur at the mouth of the Cassley river, but thereafter only a patch or two at Oykel and Aultnagealgach, at Inchnadamph, and at each of the more inland situations, where the traveller can rest or tarry. Around the villages of Knockan and Elphin, in the south-west of the county, and along one shore of Cama Loch, the crofters have some more land under cultivation, and here the common bunting breeds in small numbers, though rarer elsewhere in Assynt. Along the shore-line of Ardvar and Stoir, at Kirkaig Bay, and around Loch

Inver, patches of potato land, in the usual "lazy-bed" form of cultivation, are numerous, dotted about amongst the rocky ground often close to the sea-shore, or in larger masses in the hollows more inland. A somewhat larger extent of cultivated land lies towards the Point and Lighthouse of Stoir. Around Scourie are some neatly tended croft-lands, growing good hay and potatoes, and at Durness and Tongue considerable extent of grass-lands and crops. All these, limited though they are in extent, have a decided influence upon the flora, and consequently on the insect and bird life; and it is interesting to note that for many years the few acres of cultivated land at Inchnadamph produced regularly a covey of partridges, until finally they disappeared after the severe winters of 1878-79 and 1880-81.

In the same way, trees are not abundant in the west of the county. After leaving the extensive pine-woods of Rosehall and the wooded valleys of the Shin and Cassley, the high road skirts the river Oykel for some distance, passing through some old birch-wood on either side of the road, where bog-myrtle grows in large quantities beneath, or in the more open spaces. A few oaks occur also along this route. But all wood ceases as one leaves the valley of the Oykel beyond Oykel Bridge, whose banks are skirted by a line of stunted alder. Thereafter it is only in sheltered nooks of water-worn ravines or in the crevices of rocks that perhaps a few mountain-ash trees and straggling ivy find a foothold. The lovely valley of the Ænaig river, however, retains a well-wooded character for a considerable distance up the glen. A dreary, often misty drive, over the great moor which stretches across the watershed between Oykel Bridge and Aultnagealgach, and then descends rapidly towards Loch Assynt, brings us again to a few patches of wood at Inchnadamph, which have been planted round the farm-house of Stronchrubie, the manse, and the hotel of Inchnadamph; whilst amongst the deep crevices of the noble limestone cliffs of Stronchrubie, some fine natural hollies and thick-stemmed ivy give shelter to the ring-ouzel, whose notes come clear and distinct to the traveller's ear as he passes along the road below. Then come the more thickly wooded slopes and knolls, and heights and

hollows of the birch-woods of Assynt, the lovely birch-clad shores of Loch Letteressee, near Assynt shooting-lodge, and the wooded valleys of Inver and Kirkaig, where spruce and pine have been added to the natural wood and to the beauties of glen and hillside.

Scattered amongst the sinuous hills of lower elevation throughout the Stoir peninsula are a few very lovely bits of scenery, influenced by perspectives of hill and hollow, lake and birch-wood; and specially amongst those we would take note of the Lochs of Beannoch—already spoken of—and those of Drumbeg in the north of Stoir, and the hollows and lakes close to the road, only a short mile or two to the north of Loch Inver. North of Scourie scarcely a tree is to be seen, save on a few islands of the lochs, but between Loch Inver and Scourie there are many lovely lochs, covered with water-lilies, and their shores and islets clad with birch and royal fern. Inland, at Loch More shooting-lodge, there is a luxuriant shrubbery of rhododendron, and the steep side of Ben Stack is clothed in birch to a considerable height. At Durness scarcely a tree is to be seen, but at Tongue there are fine plantations of larch and fir around Tongue House, and here one of the finest old wych-elms in Scotland grows on the lawn. The very temperate nature of the climate of Tongue (snow rarely lying there for any length of time) exercises its influence on plant and animal life alike. At Altnaharrow, on the road between Lairg and Tongue, is a small clump of spruce and larch, and it is wonderful how the bird-life is at once observed to be affected by this oasis, as the yellowhammer, chaffinch, and robin, the wren and the hedge-sparrow, reappear at this isolated station. At Loch Hope Lodge also, there is considerable amenity of woodland, and before long the strips of young wood lately planted on the improved land bordering Loch Shin will not only give shelter to the cropped lands but also to innumerable birds and insects. At Goberneasgach and in Glen Golly is a considerable slope clad in birch-wood, in the very centre of a vast stretch of barren deer-forest, also exerting its influence in a marked degree upon the fauna.

Nor should we omit all mention of the incalculable advantages

to the county that the formation of good roads throughout has effected. Quoting Mr. Loch, we find the following passage which can scarcely miss being of value and interest to our readers: "Passing at once, from a state of almost absolute exclusion from the rest of the kingdom, to the enjoyment of the incalculable advantages of the mail-coach system, at a distance of 802 miles from the capital of the Empire, and 1082 from Falmouth, the furthest extremity in the other direction to which this establishment extends." This conveyance Mr. Loch tells us began running in July 1819.

DESCRIPTIVE OF THE PHYSICAL FEATURES OF CAITHNESS.

Perhaps no description ever written of Caithness is so concise, terse, and vigorous as that expressed in a few words by Professor Heddle of St. Andrews. He says: "Caithness stands apart from all the counties of Scotland—pre-eminent in monotony, pre-eminent in ugliness, pre-eminent in dearth of minerals. . . . A land of flatness, flags, and fossil fishes; the glories of colour and lustre and form are unknown to it. . . . Its two chief headlands have been mantled and rendered somewhat more respectable by the upper sandstones of Hoy; but about the best that can be said of the county as a whole is, that its geology is *flags*, and its history is *fishes*." [1]

Passing over part of the great "flow" land of Sutherland already described (*antea*, page 24), and thence about four miles to the east of Forsinard, we cross the county march between Sutherland and Caithness, and at the same point cross the boundary between the faunal areas of "Sutherland" and "Moray." Rising with a considerable incline over the separating ridge, and then descending, we look into the county of Caithness. Far as the eye can range, vast flows and mosses, dreary and dead-looking, roll away in utter absence of colour. Only a few slight elevations as

[1] *The Mineralogical Magazine.*

it were round the rim of this great brown saucer, break the utter monotony, or a few dhu-lochs glance in the heat-haze. Such is Caithness, except where the encircling area of cultivated meadows and farm-lands push inland, by the sides of the principal rivers, or again where far to the south-eastward the bold and remarkable peaks of the mountains in the Duke of Portland's deer-forest—Morven, the hills of Scarrabhen, and the Maiden Pap—break the sky-line with startling distinctness. These pyramidal peaks and fantastic mountain-tops are visible from almost any slightly elevated land anywhere along the whole north coast of Caithness; and indeed the view of the whole county from almost any of the lower elevations, whether in the north or east, is almost precisely the same.

Not until several miles are covered by the iron horse does the traveller find much to relieve the eye except the few desolate "tarns," "brulochans," or "dhu-lochans," which lie amongst the depressions of the flows and peat-hags. When at last the gentle slopes which form the valley of the river Thurso are entered upon, patches of heather and cultivation alternate on the higher ground, but the former giving way entirely to large areas of cropped lands and scattered houses or crofts and farms lower down. From this point a glimpse of a large loch—Loch Calder—is obtained on the left, whence the water-supply of the town of Thurso is drawn. Beyond the verdant drainage area of the Thurso valley, once more vast levels of peat or half-cultivated lands and reclaimed grass stretch eastward, over which at one time no doubt the flows had full sway. The soil laid bare beneath is clay and marl intermixed with shaly stone, the upper crust of the great Caithness pavements. The traveller crosses the Thurso river at the town of Halkirk, close to Brawl Castle—a name no doubt dear to many an ardent fisherman and sportsman. Dotted all over a large area in this district, and continuing by the shores of Loch Watten and down the Wick river to Wick on the east coast, are crofts and cots and farms, each with a few stunted alder-trees in their gardens, the only trace of wooded areas visible. Looking back as the train descends towards Thurso, a singular view

of the Berriedale Hills—Morven, Scarrabhen, and the Maiden Pap —is presented, rising like obelisks and pyramids sharp and defined upon what would otherwise be an almost level horizon; and as we descend from these higher-lying flows and farms towards Thurso, gradually the tops of these hills appear to sink, like ships' hulls and masts, beyond the billows of a great ocean. The river, which winds its sluggish course from Loch More through many miles of flow-land, now begins to cut deeper through the marl and clay, still, however, retaining its sluggish and unlovely character.

One feature which cannot fail at once to arrest the attention of the traveller is the curious fence formed of Caithness pavement, slabs of which, squared and arranged, are placed edge to edge in the ground between the cropped or grazed lands; and in the towns also, larger ones are used, and for greater durability are bound together with wooden tops and bands. This method of fencing seems to be peculiar to the district of Thurso, and to such places as are within easy carriage distance of the northern quarries. The surface or poorer class of pavement is used for this purpose.

Nearer the northern coast-line, where the land runs out into the principal headlands of Holborn, Dunnet, and Duncansbay, are what may be termed uplands; and, as we have said, these uplands, rising to a few hundred feet in elevation, run like a rim round the central flows of the county, except where penetrated by the different streams. To the westward of Holborn Head, however, up to the Sutherland march, there is a great extent of low cultivated land towards Strathy Point and the Halladale valley, the rim of hills running inland by the Hill of Dorrery from Holborn Head on a more southerly course. Near the sea these uplands are covered with stunted heather and carices, and in some parts, as at Holborn Head, they run in low ridges with shallow surface-water tarns in the hollows; the turf which is within influence of the sea air is often deeply pitted down to the stratum of rubble which constitutes the top layer of the Caithness pavements. At a depth of from 2 to 6 feet the solid flagstone lies; and it also shows in many places on the surface. This, in conjunction with the saltness of the air, and the wind-swept exposure of the greater part of

the county, renders tree-planting almost futile. In some places, markedly near Holborn Head, the shaly-looking, splintered, surface rubble crops out with jagged edges over considerable areas, looking like millions of combs with their teeth skywards. As an instance of the salt-sickened nature of this thin, poor soil, sea-pink is here found growing and flowering several hundred yards inland. It appears to take root-hold—apparently a very precarious one—mostly upon the bare wind-swept ridges, breaks, and rubbly patches.

Upon the very summit of the cliffs at Ness Letter is one of the principal quarries, and the refuse is backed over a cliff some 200 feet in height. From near this point Strathy Point is visible, but it closes all the further view out to the westward.[1] The intervening headlands, with cultivated areas inland, are the low, rocky Brimms Ness, and Sandside Head, and Rudha Bhra, near Melvich. Looking eastward from Brimms Hill (300 feet high) over the intervening uplands of Holborn Head, the far-eastward land about Duncansbay Head, and the extreme north-east of Scotland is clearly visible across the lower sandy links of Old Tain and Dunnet, and nearer, across the Bay of Thurso, Dunnet Head stands boldly forth; while across the Pentland Firth the mighty brow of Hoy, and the strangely isolated stack called the "Old Man of Hoy," show ruddy in the gleams of evening sunset, along with a considerable portion of the south shore of that island.

The dip of the strata of the Caithness pavement towards the north-west, is very distinct, and at one spot close to Ness Letter this is remarkably patent, where a series of great unbroken and apparently comparatively slightly weathered slabs of pavement, separated by fissures, or having the interstices filled with sea-pink, slope away from south-east to north-west, dipping at least 10 or 12 feet in 80 or 90 yards. Each of these slabs would show an average measurement of 9 feet in breadth, some being quite 14 feet. The cliff-faces in very many places around Holborn Head overhang, and owing to the dip of the strata before men-

[1] Except in very clear weather, when the further and higher promontories of North Sutherland are faintly distinguishable.

tioned, are not particularly suitable for the nesting of rock birds. Few fissures and still fewer ledges are formed, and only where faults occur in the general incline can a few guillemots find lodgement. Even the under-cliff at places shows an inclination of about 22° to the north-west.

Following the Holborn coast-line eastwards a very fine stack of rock called "The Clett" is seen embayed by a narrow *göe* and by Holborn Head. It is perhaps half an acre in extent of top-surface, and is populated by a great colony of herring-gulls, the young of which on the 28th of June were nearly half as large as their parents. A large colony also of guillemots were resting, huddled together, on the seaward rise of the Clett, and on the south-east side of the same stack they found nesting-ground, because here the dip of the strata being inwards towards the rock, not outwards towards the sea, their eggs cannot roll off.

Near the Headland are several fine examples of "swallows" or "creux," or, locally, "blow-holes," great holes piercing downwards to the "gloops"[1] beneath: the hollow boom of the sea waves coming up in regular cadence to the ear, though the waves themselves were often invisible.

Most remarkable amongst these is "The Devil's Bridge." This, originally no doubt a "blow-hole," has after much travail by the forces of Nature been opened out seaward. It faces the outer side of the Clett, but at the top is bridged over by an apparently immoveable and mighty mass of pavement, some 15 feet in perpendicular thickness. Lower down the chasm, into which one can descend with ease for some distance, it is again spanned by a mass of rock. A photograph alone can give an adequate idea of the grandeur of this half-creux, half-göe, and of the Clett seen through the opening.

We visited the lighthouse at Holborn Head on one occasion, and found it as it had been described, not a favourable position for the observation of migratory birds. Not a bird had appeared at the light since May 1884 up till the date of my visit in June 1885.

In the neighbourhood of Dunnet are extensive sandhills, called

[1] Sea-caves where the tide strikes and throws out the air with force.

"The Links of Old Tain" and "Dunnet Links," which were once bare hills of blowing sand like those of Culbin on the Moray Firth, or of the island of Berneray in the Sound of Harris, but which now have been changed by the planting of bent grasses into a daisy-bespangled, turf-covered, and rich pasturage. The planting of this was performed by the evicted Sutherland crofters, who for a time overran the whole county of Caithness in search of employment.

In this district, also, the Caithness pavement disappears, the last quarries being at Castletown, west of Dunnet Bay, and gives place to a yellow crumbling sandstone along the whole cliff-face of Dunnet promontory, hardening, however, at one place near the village of Brough into a good building freestone, almost the only freestone quarry in Caithness. Overlying this is deep black peat covered with stunted heather and grasses, a country singularly destitute of summer bird-life. The cliffs are yellowish or reddish, deeply honeycombed by wind and weather, with much earth and grasses on its numerous ledges, and beneath, a shore or detritus of huge blocks many tons in weight, which have fallen away from the parent cliff. These cliffs reach a little over 300 feet, and the highest points are a little to the east of the lighthouse, the summit of the dome of the lighthouse being 346 feet high.

A vast colony of herring-gulls may be said to occupy the entire cliff-face from the entrance of Dunnet Bay at Point of Ness and Dwarwick Head, round to the east side of Dunnet Head—some five miles, by 300 feet high. A few shags are occasionally seen, and one considerable colony was observed on the deep ledges, half way up the cliff—a not very usual situation for their nesting quarters. Small colonies of guillemots were here and there met with, generally low down; and puffins and a few razorbills were tunnelling deep into the earthy ledges.

The coast cliffs of Dunnet, though much honeycombed and weather-worn, are rather monotonous in their general outline, at least as seen from landward. This monotony is relieved, however, at places by a few far-reaching göes. The finest of these is Red Göe, where the perpendicular cliff is cut down over 300 feet to

the sea-level, and penetrating inland a distance of about 130 yards, is yet only about 20 feet broad at its widest part, and narrows to about 15 near the entrance and at the top. A horse we believe could almost leap the chasm, but such attempts are always dangerous, distance in such places being unusually deceptive. "The Ashy Göe" is another fine göe, and from its southern side a good view can be obtained of the higher cliff-faces to the north, which exceed the 300-feet limit.

Inland, upon the peninsula of Dunnet are many small lochs, one of which, near the lighthouse, has been very successfully stocked with trout by Mr. Trail of Melsetter, Orkney, to whom the property belongs. Occasionally swans, geese, and ducks rest here on migration; and St. John's Loch, near Dunnet, often holds many wild-fowl in winter. But in summer this great peninsula is, as we have before said, singularly destitute of land-bird life. We only added a pair of oyster-catchers (which, owing to the character of the coast-line here, are scarce along shore), a flock of six wild-ducks, and an occasional lark, or meadow pipit, to our day's list of birds seen, and one solitary golden plover was heard piping still further inland.

Some days after our visit to Dunnet Head, and while residing at Huna Hotel, we continued our survey of the north coasts of Caithness, this time by boat, on which occasion we were accompanied by the Rev. Mr. Macpherson of Canisbay Manse, and a most enjoyable day we spent, the sea being calm as glass, so that we could enter the deep sea-caves, or "gloops," and far-penetrating göes. Duncansbay cliffs are very grand, especially from the Head round to Skirsa on the east coast. In one of the principal göes—Wife's Göe—only wide enough to allow of the passage of our Orkney boat, the cliffs rose sheer 260 feet above us, and we passed first through a high-roofed passage into the creux beyond. Rock-doves were innumerable; and many caves we examined had the floors inches deep in excreta—a valuable find, one would think, for any of the gardeners of the local gentry. The Stacks of Duncansbay are splendid examples of isolated pillars, equalling in height the cliffs of the mainland. We rowed also through "The Thirle

Door," where tradition, or history, relates, that on one occasion, a large brig ran in during a gale, and her yards scraped against the cliffs on either side, so that the sailors landed from them on the cliff-top. In this district of Caithness there still exists a considerable number of Keerie sheep—the old native breed—closely allied to those of St. Kilda, and a few of which are still found in the more remote districts of Aardvaar, in Sutherland. This flock belongs to the crofters, or small tenants, and in order to catch them when occasion demands, the natives run them down a steep path or slack in the Duncansbay cliffs, and at certain states of the tide drive them into a natural *cul-de-sac* formed by the undercliff. There they are marked, fleeced, or counted. Any found without a mark are sold to the neighbours, and the money divided amongst the owners. Their flesh is excellent, and they can be bought at that time for a very few shillings.

Returning from the same trip, on board the Earl of Caithness's yacht *Francesca*, we had an opportunity of witnessing the tumultuous gambols of the "Merrie Men of Mey." In this extraordinary place—a strong tide-run of the Pentland Firth—his Lordship's fine large steam-yacht, some 450 tons register, rolled heavily. To-day it was calm; but it is said that calms are the most dangerous for small craft, and we can quite imagine it. Yet what this frightful place may be during a gale of wind against the tide baffles imagination to picture, and we would fancy few who have once experienced it, *and lived*, would care to do so again. It is supposed that a rocky uptilted ledge of the great Caithness pavement catches the tide deep down, and causes the whole vast stream between the bay of Mey and the south-west corner of Stroma Island to boil and hiss, and raise great breaking pyramids of water when the tide sets from the east. Stroma, which is somewhere called "the enchanted isle," is guarded on the south by the "Merrie Men of Mey," and on the north and east by the equally dangerous "Bores of Duncansbay."

To visit the Pentland Skerries a very fine calm day must be chosen, and a picked crew of men of local experience selected. The 2d of July was just such a day, and J. Sutherland of Huna and his crew the right men in the right place. The

Rev. Mr. Macpherson again accompanied us, and the result was another enjoyable day. We had to cross the Bores of Duncansbay, and it certainly was a novel sensation, passing now amongst pyramids of water, toppling over in every direction without a breath of wind, and again gliding over a rapidly swirling sea, with a surface as if covered with oil, the effects upon the sea's bosom of many conflicting tides and currents beneath. Once across this disturbed and angry tide-race, we glided into smoother water, and now removed from the sheltering pillars of water of the Bores of Duncansbay, we set sail before a favouring north-westerly breeze, and slipped quietly down upon the Pentland Skerries, where we landed about eleven o'clock A.M. Such an extraordinary jumble of cross tides and conflicting currents, half-whirlpools, smooth glides, and rattling rapids, we never saw before.[1] We were right heartily welcomed by the lighthouse-keepers, and indeed received quite an ovation. The men were all more or less keen about the subject of migration, and no wonder, for their island habitation is only second to the Isle of May in the importance of its migrational results. Skerries is a misnomer for the larger island. It is a lovely place, richly grassed by sweet, short pasturage, and feeds some score of sheep upon 114 acres, besides the men's cows, for which grazing the sum of £52 is deducted by the Commissioners from the men's wages as rental: the walking is easy, and feels like passing over several plies of a thick-piled carpet. Its elevation is not great above sea-level—some 60 or 80 feet,—but there are curious göes and "blow-holes" inland on the east side. We had no time to go over the whole of the island carefully; but a week, we believe, spent here at the migration seasons would be amply repaid by the results of observation: nor could we land upon the smaller skerry, as the tide was throwing up a nasty surf, though the wind was quite light and summerlike. Many great grey seals were seen on the outlying rocks, and a few of the common seal (*vitulina*) were

[1] Since the above was written we have been informed that we were watched with great anxiety by the famous fishermen of Stroma, that we went dangerously near the "Swirlies"; and that a "vacancy in the See" of Canisbay was nearly occasioned.

also observed. A corn-crake took off its young this year in one of the gardens, leaving four or five rotten eggs in the nest besides, which we saw: it has bred here regularly for some seasons. The stormy petrel bred last year on the island; but we will speak further on, under the different species, of the bird-life of the Pentland Skerries, having kept, as usual, a careful list and notes of all those we saw. We had a fine smooth return passage to Huna, and were very glad to have achieved our visit to the Skerries.

The cultivated area of the county of Caithness encircles the whole north and east portions, extending round the coast, and averaging in width about $2\frac{1}{2}$ miles on the north coast, going, however, much further inland in some parts, where it follows the courses of the rivers, such as those of Thurso and Wick, as well as of the smaller burns which run to the sea. The valley of Thurso is cultivated to a distance of several miles inland. On the east coast this strip of cultivated land is narrower, disappearing at Duncansbay Head, as indeed it does at all the points where the uplands abut upon the coast-line. Near Wick it widens again, and for many miles inland, cultivation has gained land from the flow, owing to the impulse given to agriculture by the rich supplies of manure obtainable at the fish-curing stations—the surplus herrings in abundant seasons being sold to the farmers at about 2s. per barrel. The cultivated land reaches along the line of railway to Georgemas Junction—about the highest point of the line,—and, stretching along both sides of Loch Watten, joins with the cultivated lands of the Thurso valley. There seems to be little doubt that this depression, richly cultivated, and holding a few oases of plantation, forms the natural highway of spring migrants, when, owing to the prevailing wind at the spring migration season being more to the south of east than usual, birds hug the coast of the Pentland Firth, and seek shelter and rest before attempting the further passage of the North Sea. Thus, as we shall show, spring migrants to Norway are not unfrequently met with on the north-east coast of Caithness.

The cultivated areas of the Thurso and Wick rivers offer greater inducements to spring migrants flying east. In the ex-

treme north-east of Caithness upland again occurs, especially in the parish of Canisbay, as a glance at the map will at once show, but this part of the county contains by far the largest portion of uninterrupted cultivated land. Southward from Wick it becomes again much contracted, soon giving way inland—first to upland, and then to interminable flow-land, or, in the south-east, to the celebrated grouse-moors of Dunbeath, and the mountainous districts of Berriedale and Langwell.

Noss Head Lighthouse was visited in company with Mr. William Reid of Wick, on the 4th July. Mr. Reid—formerly bookseller in Kirkwall—is over seventy years of age, hale, hearty, light, spare, straight, and active; has grey beard, but dark auburn hair; is weathered and wiry. Ever since a "laddie" he has been a keen naturalist, observant and enamoured of Nature for Nature's sake. This is evident in his walk and conversation—a man with whom to pass a long summer day in the open, is, as we now know, a pleasure of no ordinary kind.

Noss Head Light lies open to the north-north-east, east, south-east, and south-south-east, and is 175 feet above the sea. No land-interruption occurs; nevertheless it is almost utterly unvisited by birds. Why? Dunnet Head is equally deserted, but there, land does lie eastward of the light, and no doubt partly intercepts the birds arriving at night, if they do come that way: Holborn Head is also unvisited, but it too is landlocked to a considerable extent. But Noss Head stands clear out and faces the wide North Sea, and the spray in a north-east gale flies almost as high as the lantern dome. Mr. Greig, the present light-keeper, is quite at a loss to account for the scarcity of bird-life, as in other localities on the east coast, almost identically situated, he has witnessed many great, *though never regularly-running*, migrations. Meanwhile we can only partly account for it by supposing—and there is much to bear this out—that Caithness, or this part of it, does not to any appreciable degree participate in the general great autumn migration of birds coming in over the cliff edge.[1]

[1] See General Remarks in Migration Report for East Coast of Scotland, 1885, p. 7, *et seqq.*

The coast around Noss and Ackergill is interesting, but does not compare with the higher cliffs of the north and north-east. The ruins of the old castle of Girnigoe are very fine and massive, standing out—as most old Caithness castles do when near the coast-line—upon a far sea-reaching promontory of cliff protected from invasion by deep göes, and by a moat and portcullis gate on the narrow landward side.

Around Ackergill bay is a fine stretch of sand, and a limited area of sandhills—a sweet smiling bay in the otherwise rock-bound coast. A similar bay, but smaller, is imbedded in the cliffs at Freswick, south of Skirsa Point.

South of Wick the shore is very rugged and fine, and though not of great elevation, yet there are some deep göes and caves, massive stacks, and gaunt precipices, holding a large population of birds, and quite recently the nesting site of the raven and also of the peregrine falcon. On the summit level *Primula scotica*, the little rare Scotch primrose, grows abundantly, starring the close turfy grass slopes with its pale green leaves. Some of the göes are utilised as fishing coves, just as they are upon the east coast of Aberdeen. One stack—Dunbar's Stack—is occupied by the lesser black-backed gull, now comparatively a rare Caithness bird, owing to the systematic destruction by gamekeepers, assisted by the apparently superior colonising powers of the herring gulls. Be that as it may, the Wild Birds Preservation Act has distinctly had the effect of increasing the numbers of the herring gull, but not those of the lesser black-back, whilst the great black-back has been almost extirpated in the county.

The wooded areas of Caithness are few, small, and stunted, the only well-wooded portions being those around Berriedale and Langwell, and at Latheron and Dunbeath. Small plantations occur around most of the county gentlemen's seats, as at Sir Tollemache Sinclair's estates near Thurso—at Thurso and Brawl Castles; at Olrig House near Castleton; at Barrogill Castle, the country seat of the Earl of Caithness, in the north; and at Stirkoke, Hempriggs House, and a few other isolated localities, including the walled-in gardens in the towns. But these oases are wind-

pruned and bent till they look on the north-west sides like great well-kept hedges; few trees seem able to reach to a greater height than about 20 or 30 feet. At Brawl we saw the highest trees in the county—beech, elm, and oak—until we came south to Langwell and Berriedale. Still, these oases have their influence on bird-life, as our list undoubtedly shows, many species only of late resident in the county, such as the spotted flycatcher, being found in these patches of wood. As already explained, it seems hopeless to plant with any expectation of timber, but if planting were prosecuted on a larger scale, much might be done by affording shelter from the prevailing winds. The shallow soil spread over the hard and almost horizontal layers of rock beneath, prevents a healthy downward growth of roots, every fissure or crack, and even the flat surface, proving so many channels for running water to rot the laterally spreading fibres and rootlets. But on leaving this geological formation for the more suitable and deeper soil towards the south-east, we at once find large and perfect trees growing in the valleys, and beautifying the scenery and rapidly affecting the local bird-life. It is not therefore, perhaps, strange to find that people of cultured tastes and habits —the lairds of the North Caithness estates—do not, as a rule, live much amongst their northern wind-swept uplands, but prefer the sunnier south. We passed many uninhabited country-houses between Wick and Dunbeath, such as Ackergill, Thrumster, Hempriggs, Ulbster, Clyth, the first inhabited one we met with being Dunbeath Castle, the property of Mr. Thomson Sinclair. The dull bleakness, and utter want of inland beauty of nine-tenths of the county, must act as a strong deterrent, often possibly a nameless horror, to the life and social intercourse among the gentry. Caithness, as we are told in a *Handbook to Thurso and its Vicinity*,[1] includes three estates of more than 40,000 acres, or something less than half the total area of the county, the largest and finest being that of the Duke of Portland, viz., 81,605 acres.

The south-east corner of Caithness differs widely from the rest

[1] *Handbook to Thurso and its Vicinity, and Guide to the County of Caithness*, p. 101.

of the county, and it seems as if the march here had been laid down somewhat on the lines and on the same principle as that of the sister county at Aultnagealgach (*vide* St. John's *Tour in Sutherland*) than on more equitable grounds. This part contains nearly all the higher hills in Caithness, varying in height from 1300 to 2000 feet, Scarabhen being 2054 feet. Other hills are Morven and the Maiden Pap.

All these hills lie in the deer-forest of the Duke of Portland, and give birth to two rivers—the Langwell in the south, and the Berriedale in the north—which unite within two hundred yards or so of the sea, and enter the area of the village of Berriedale. Both these rivers contain salmon, yet although they unite and even flow together for a short distance, each stream keeps its own fish distinct. The straths through which these rivers flow are the best wooded areas in the county, containing, besides natural birch, the extensive fir plantations laid out by the late Duke of Portland. Game of all kinds is abundant here, including pheasants; and this is probably the only part of the county where woodcocks breed in any numbers. Rising near the county march between Sutherland and Caithness, and north-west of the Duke of Portland's forest, runs the wide open valley of Strathmore, through which flow the head-waters of the Thurso, so well known to all salmon anglers. Running through Loch More, which gives such excellent sport in April, it is joined by the river which runs down Strath Beg, and after another twenty-mile run falls into the sea at Thurso. Numbers of geese visit Strathmore in spring, and the small lochs and flows in this part of the county are the breeding-grounds of numbers of ducks, including the common scoter, and also of waders, such as greenshanks, etc.

Coming back to the county march at the seaside, we find a small place called Ousdale. It possesses nothing remarkable in itself, but it is from this locality that, as will be seen further on in our list, the greater number of the larger raptors have been procured, these birds apparently landing here on their autumn migrations. About the Ord, too, is a colony of herons, and some guillemots and other sea-birds build; and all along the coast northwards, the rocks, which are of a less height than at the

Ord itself, contain colonies of gulls, shags, and numbers of rock-pigeons.

Having thus described the physical aspects of Caithness, it may not be out of place shortly to insist upon the importance of these features, and the part they play in the increase and distribution of species, whether of mammals, birds, or other classes of animal life.

No doubt remains in the minds of unprejudiced naturalists regarding the rapidity with which many species are extending their range in Scotland, not merely in the newly planted areas, but also even in more barren reaches of moor- and moss-land, as well as in out-of-the-way nooks and corners. So patent are these extensions—and in many cases fluctuations—even to the most casual observer who is a resident in the country, that we should scarcely deem it necessary to dwell upon the fact. But these perfectly well-known and recognised processes are most singularly relegated by certain writers to the regions of myth, mist, and mystery, and are queried somewhat in the following style :—"It has not been recorded north of the Moray Firth; but *our* information on the ornithology of this district is so meagre that it may have been overlooked" (the italics are *ours*).

Writers whose personal acquaintance with the more boreal portions of Great Britain is so infinitesimal and fragmentary, and whose personal inspection of Scotland as a whole is viewed through exceedingly "provincial" (*i.e.* London) spectacles—almost of the Mark Twain's Harrisian type—are quite right to acknowledge their *own* lack of information, but we hardly think it is desirable, in these latter days of rapid extension of range of species—human or otherwise—to use the word "overlooked" except in connection with the personal pronoun. Had the English author whom we criticise used the personal pronoun in this instance, his meaning would have been clearer, and no other interpretation could have been put upon the somewhat Gladstonian sentence, but "Because *my* information is meagre it may have been overlooked." This would at least have expressed, in fewer words, the amount of knowledge that was—and perhaps still is—wanting.

Personally, we are delighted if we can add our mite. We shall feel glad, and imbued with pleasurable excitement should it be acknowledged; but if not, no matter.

We mention this, principally to point out that, though this Fauna may neither be complete now, nor in many years hence, it is *not* because of an utter lack of observation,—the which is attributed, by the author now under criticism, to those who are interested in such matters north of the Moray Firth,—either at this present time—A.D. 1887—or for many years previously.

We take notice also of the changes in distribution, because we consider this part of our subject as one of the most interesting branches of Ornithology—we mean, the increase and extension of range of species, the particulars of their minute gradations of progression in some cases, and of gigantic strides in others, having distinct relations to their bi-annual migrations in spring and autumn.

We conclude this part of the Fauna with an expressed hope that the phrase "of accidental occurrence" will be shortly expunged from all local Faunas; and that the other word, "overlooked," be only used where personal experience has been at fault. In this way, authors who profess *to record facts, not opinions,* may avoid in future to a great extent such "a beggarly account of empty boxes" as appears in paragraphs which often refer to the distribution of species in districts *north of the Thames!*

THE FAUNAL POSITION OF SUTHERLAND AND CAITHNESS.

SCOTLAND has been divided by Dr. Buchanan-White of Perth into twelve defined floral and faunal areas. These are named, commencing in the south—Solway, Tweed, Clyde, Forth, Tay, Argyll, Dee, Moray, West Ross, and Sutherland, the Orkney and Shetland Isles, and the Outer Hebrides. These faunal areas are separated by the natural watersheds and waterways, and are perhaps more consistent in their peculiarities from a floral than from a faunal point of view. We believe, with the majority of naturalists, that natural divisions cannot be so arbitrary as artificial ones; and we consider it desirable to indicate, as shortly as possible, with which of these twelve natural divisions our present area claims to have connection.

The great dividing range of mountains which forms the backbone of the county stretches northward from the southern boundary to the Reay Forest, and then turns eastward by Ben Hee, including all the head-waters of the rivers which run westward as far as Ben Stack and Cape Wrath, and those of the rivers which run northward between Cape Wrath and the eastern confines of the county, and separating both of these from the head-waters of the rivers which run into the Moray Firth. We now propose to follow this dividing line with somewhat more minuteness of detail.

The watershed between the head-waters of the Kirkaig river and the valley of the Oykel is situated between Loch Ellag and the county march at Aultnagealgach; proceeding northward, it runs along the sky-line of Braebag and skirts the ridges and corries of Coinnebheal, being very boldly defined, especially at the pass between Braebag and Ben More, and again at the pass over the

shoulder of Ben Chaoran. Thence it continues along the sky-line to Meall-a-chuail, overlooking Loch Griam, and across the high-road between Lochs Merkland and More, and, mounting the shoulder of Ben Hee, turns abruptly from a hitherto northerly course to one almost south-east. Up to this turning-point it has separated the water systems of Moray in the east from West Ross, but if we follow it now in its eastward progress we find that it separates the water systems of Moray and Sutherland, or the rivers which run south to the Moray Firth, from those which run north to the Pentland Firth. Before following this line, however, we will notice the spur which separates the water systems of West Ross and Sutherland. From a point on the forest road which leads close past Ben Hee towards Goberneasgach shooting-lodge, a sinuous sky-line passes among the great hills of the Reay Forest, skirting the summit ridge of Sabhal Bheag and Sabhal Mohr, and then keeping down the left of the Dionard basin crosses the high-road near Gualin shooting-lodge, close to Lochan-tarbhach-more, and thence pursues an almost direct and straight line to Cape Wrath, its elevation gradually lessening after passing the summit ridge of Craig Riabhach (1590 feet), until at Cape Wrath it passes out at the cliff edge at an elevation of only 370 feet.

The south-easterly course of the watershed separating the "Moray" and "Sutherland" faunal areas continues in a somewhat irregular line towards the Crask Inn, on the high-road between Lairg and Altnaharrow. Thence it follows the sky-line or higher ridges of Ben Armine, turning northwards between Lochs-na-choir and Badenloch, near the sources of the river Helmsdale. Then its course is again easterly by Ben Rossal and Ben Vaddu to the Highland Railway at Forsinard, after which it follows the county march between Sutherland and Caithness south-eastwards to the coast above Helmsdale.

We do not intend to insist upon the faunal importance of the three areas of which our district claims so large a share; but as these watersheds do occur frequently at high elevations, and as climatic change, temperature, and soil are in no small degree co-existent, and as geological considerations cannot be overlooked,

especially in the west and north-west, as a glance at a geological map will at once show; and as we know that faunal characteristics in many other countries, as well as floral, are in a great measure dependent upon these, and upon one another, we desire to indicate the part which our subject counties bear in their natural as well as their artificial divisions and boundaries. Many indications of the importance and influence of these natural divisions are already within our grasp, but insufficient, perhaps, to warrant our occupying more space than we have done in this place.

Sutherland, West Cromarty, and Caithness are, therefore, composed of portions of three faunal areas:—1st, West Ross, which includes Skye and a part of Inverness, and which is marched on the south by Argyll, and on the east by the backbone of mountains which extends down the west side of Scotland; 2d, Sutherland, which in its entirety includes Caithness, and whose rivers run northward to the Atlantic Ocean; and 3d, Moray, a vast faunal tract, whose basin is the Moray Firth, and whose catchment includes one-third part of Sutherlandshire and the larger portion of Inverness-shire, and Nairn, Elgin, and Banff, and which is bounded on the south by the faunal areas of Argyll, Tay, and Dee, and on the east by Dee.

VERTEBRATE FAUNA OF CAITHNESS.

Of the remains of birds among the brochs and kitchen-middens of Caithness we have not much to relate.

Laing mentions Great Auk bones (*Alca impennis*); Lesser Auk (*Alca torda*); Cormorant (*Phalacrocorax carbo*); Shag (*Phalacrocorax graculus*); Solan Goose (*Sula Bassana*); and,—as he does also in the account of the mammalia of the brochs, etc.,—points out the important "link of connection with those of Denmark, strengthening the evidence of high antiquity drawn from the rudeness of the implements found beside them." Figures of the bones of *Alca impennis* are given (*op. cit.* p. 51, fig. 57).[1]

In drawing up the following list of the existing birds of Caithness, we have taken for its basis the MSS. of the late Mr. Henry Osborne, kindly placed by his father at our disposal. Previous to these MSS., which date up to 1868, it appears that two other lists had been published: the first, given in the New Statistical Account of the parish of Wick, contains a bare list of the species preserved in Dr. E. S. Sinclair's collection,[2] all said to have been obtained in

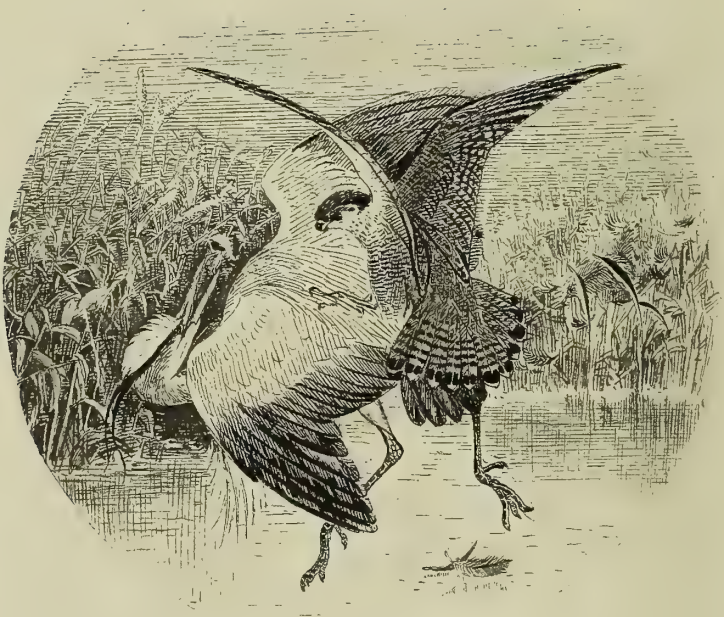
[1] See also *The Great Auk or Garefowl, etc.: Its History, Archæology, and Remains.* By Symington Grieve, Edinburgh. Thomas C. Jack, Ludgate Hill, London, 1885. Pp. 43-47.

[2] We had better here remark that Dr. Sinclair's collection was seen behind dark and locked cases, of which the keys were lost, by Harvie-Brown when at Thurso. The whole is in a very rickety condition, and there is absolutely no record left giving localities or dates to any of the rarities therein contained, as we found out by applying to the authorities. Any notices of rare species mentioned by us as occurring in this collection must be taken for what they are worth. Should, however, anything further come to light before the time of going to press, such will be found in an Appendix. It appears that Mr. Wilson, in

the county; the second was written by Mr. R. I. Shearer, in the *Proceedings of the Royal Physical Society of Edinburgh* (vol. ii. pp. 334-341), and supplemented by remarks and additions, up to p. 347, by Mr. H. Osborne, and which was read at a meeting of the Society on 22d January 1862. In treating of this earlier portion of our history of Caithness birds, we have chosen the following method.

We have given place, as Mr. Osborne does, to all the species mentioned in Dr. Sinclair's list; but where there is any reasonable doubt of the genuineness of any of those therein contained, the the remarks on them are placed in brackets.

company with Dr. Sinclair himself, saw the collection in the year 1842, and Mr. Wilson has the note, "obtained by him exclusively in the county of Caithness." Mr. Wilson gives a list of some twenty-nine of the rarer species seen in the collection at that time.—*Voyage*, 1842, vol. ii. pp. 178-180. See also Appendix.



MAMMALS.

EXTINCT MAMMALIA.

Having thus endeavoured to describe the geographical position and areas, and the physical aspects of the two counties, and having also treated of their position in relation to the other faunal areas of Scotland, we proceed to speak of the vertebrate fauna, and as is customary, besides being in accordance with their natural position, we commence this portion with the Mammalia.

The oft-quoted passage in Sir Robert Gordon's *Earldom of Sutherland* (1630) must, we fear, do duty again, as being about the earliest—and also almost the latest—record of two pre-existing species of Mammalia. Sir Robert Gordon's list contains "Reid Deir and Roes, *Woulffs*, Foxes, Wyld Catts, Brocks, *Skuyrells*,[1] Whitretts, Weasels, Otters, Martrixes, Hares, and Foumarts" (the italics are ours).

According to tradition, wolves were at one time so abundant in Sutherland that the natives of the west coast buried all their dead on the island of Handa, to avoid their disinterment by them (*Voyage round Scotland*, p. 347). Mr. Scrope instances accounts of four old wolves and several whelps which were all killed about the same time, but in different places, between the years 1690 and 1700. The localities named are Achumore in Assynt, Halladale, and Glen Loth, the latter being the locality of the veritable "last wolf" of the county. "These," says Mr. Scrope, "were the last wolves killed in Sutherlandshire, and the den was between Craig

[1] For proofs of its extinction and subsequent restoration, see *The History of the Squirrel in Scotland*, by J. A. Harvie-Brown.—(*Proc. Royal Physical Society*, vol. vi., 1881, pp. 59 and 164).

Vhodich and Craig Voakie, by the narrow glen of Loth."—(*Days of Deer-stalking*, pp. 374-7.)

In 1621 we have a record of the wolf in Sutherland. The following is from a MS. Account-Book of Sir Robert Gordon, Factor for Sutherland :—

> *Item.*—Six poundis threttein shillings four pennies given this yeeir (1621) to Thomas Gordoun for the killing of ane wolff, and that according to the Acts of the countrey.

And we find an earlier record still, given us by the Rev. Dr. J. M. Joass, to whom we are indebted for several curious items of information, who says : "I find in a facsimile copy of a map of Great Britain from the Bodleian Library, and supposed to have been made by Edward II. when Prince of Wales, that Sutherland has the figure of a wolf on the top of a mountain, with the legend—'Hic abundant lupi.'"

We have evidence of the occurrence, in prehistoric times, of the reindeer (*Rangifer tarandus*) and the beaver (*Castor fiber*), remains of which have been found in different parts of Caithness and Sutherland. A number of bones and pieces of horn, some of the latter showing the palmation by which the reindeer was identified, were found whilst Mr. Houstoun of Kintradwell and others were engaged in digging out the remains of an old tower there. Many of them were broken in fragments, showing the appreciation which the natives of the rude Stone Age had for marrow.

In the county of Sutherland, Dr. Joass gives a list of sixty brochs and kitchen-middens ; and a map—which we speak of under Caithness—shows the localities, which are principally in the northern districts, and in the eastern, to the south of the Ord of Caithness. Of the importance of these brochs we will speak further on.

Of other extinct animals we have traces of the wild-boar (*Sus scrofa*), in Gaelic traditions which still survive; and these have given names to various localities in the county, such as Aultnatore—"The Burn of the Boar"—near Ben Loyal, where Dermid was slain by Fingal in revenge for seducing the latter's wife (*Songs of*

the Bards). According to Boyd Dawkins, the wild boar was extinct in Britain "before the reign of Charles I."—(*Cave-hunting*, p. 76.)

For Caithness Mammals, we have the following materials :—

Prehistoric Remains of Caithness. Samuel Laing, Esq., M.P., F.G.S. 1866.

In this work Mr. Laing gives a full list of the remains of animals found in the Keiss middens, and explains that "there is a considerable general resemblance to the fauna of the Danish Kjökkenmöddings," and speaks at length of such discrepancies as do occur. All his arguments go to prove a previous similarity of the ancient faunas of Caithness and Denmark, and since he wrote, one of his chief difficulties has disappeared by the discovery of bones of the reindeer (see Anderson, *infra*). The occurrence of the bones of the great auk in Caithness and in Denmark strengthens his views. The absence in these brochs and middens of the remains of sheep, and the presence of those of the goat, "strengthen the inference against the existence of domestic animals." The presence, too, in such very small quantities, of the remains of a dog, together with the absence of any gnawed bones, likewise makes it uncertain that the dog was domesticated, as the size of these few bones present in the middens, rather points to their identity with the fossil dog of the *quaternary* period. Mr. Laing says further: "Of the Mammalian remains, those of the goat (*Capra hircus*) and ox (*Bos longifrons*) are most numerous; then pig (*Sus scrofa*), horse (*Equus caballus*, var. *fossilis ?*), stag (*Cervus elephas*); and of dog (*Canis familiaris*, or *C. familiaris fossilis*), and fox (*Canis vulpes*), a single specimen only of each was found." A complete list of the animal remains found in Keiss middens is given on pp. 50 *et seq.*; and Mr. Laing has some interesting remarks upon the rarity of the earlier captures by the natives of the wild ox or stag, judging from the scarcity of their remains in the kists, as compared with an increase "discernible in the upper middens, as if the power of capturing wild animals had increased with an improvement in the weapons of chase."

Notice of the Brochs of Yarhouse, Brounaben, Bowermadden, Old Stirkoke, and Dunbeath in Caithness, etc. [1] Dr. Joseph Anderson. 1871.

In this are many notices of remains of the same animals mentioned by Mr. Laing, with the addition of two fragments of bone of *Rangifer tarandus* found at Dunbeath, identified by Professor Owen, and figured by Dr. Anderson (p. 138); and those of a "large dog, or possibly wolf (?)," also from Dunbeath. Accompanying this interesting paper by the present Curator of the Society's Museum, is an Appendix giving "A List of Brochs in Scotland, and early notices of them" (p. 178), and a map to illustrate the same, showing the marvellous grouping of these ancient dwellings in the northern and western isles of Scotland, and in the lone straths of the northern mainland. As this list and map together show, the largest number at present known are found in Caithness (79), Orkney (70), and Shetland (75), out of a total of 374; but Dr. Anderson adds, "uncertainty as to the true character" of the Danish (?) dry-built forts or castles, and the duns in the Outer, as well as in the Inner, Hebrides, "prevents their enumeration." We mention the above papers, and give these outlines of their contents, believing that a large field is still open to investigation amongst these brochs and kitchen-middens, and that there is abundance of interesting work for any one giving attention to the ancient distribution of animals; and it may not be out of place to call the attention of the Sutherland Association to the subject.

We append a list of the extinct mammals of Caithness as treated of in the above-mentioned papers :—

Ox (*Bos longifrons*).
Horse (*Equus caballus*) (*fossilis ?*).
Red Deer (*Cervus elephas*).
Reindeer (*Rangifer tarandus*).[2]
Goat (*Capra hircus*).

[1] Read before the Society of Antiquaries of Scotland, 9th June 1871.—(*Trans. Soc. of Ant.*, vol. v. pp. 131-198.)

[2] See also Dr. J. A. Smith's paper on "Occurrence of the Reindeer in Scotland," *op. cit.* vol. viii. p. 200.

Hog (*Sus scrofa*).
Dog (*Canis familiaris*) (*fossilis ?*).
Fox (*Canis vulpes*).
Wolf (*Canis lupus*), doubtful.
Rabbit (*Lepus cuniculus*), perhaps recent.
Grampus (*Delphinus orca*), or small whale ?
Dolphin (*Delphinus dolphis*), or some other small cetacean ?

EXISTING MAMMALIA.

For Existing Mammalia our materials are somewhat scanty.

Mr. R. I. Shearer wrote a few articles in the *John o' Groat Journal*, the first and second only of which we have seen. These treat of the polecat and weasel, and are the first, and perhaps the only, articles of the series, and bear the date of 1871.

The *Old Statistical Account of Scotland.*

The *New Statistical Account of Scotland.* In this a fairly complete list of the Mammals of the parish of Wick is given, dating 1845.

"A List of Vermin killed in Sutherland and on the Sandside and Langwell estates in Caithness between the years 1818 and 1827." This includes foxes, wild-cats, martens, polecats, etc., and will be found published *in extenso* in the Appendix.

We are also much indebted to Mr. William Reid, of Wick, for his excellent MS. notes on Mammals,—most ungrudgingly, and in the spirit of a true naturalist,—placed unconditionally at our disposal, which we have incorporated in the text.

In the arrangement of our list of species, we have for the most part followed that of Messrs. Clarke and Roebuck's *Vertebrate Fauna of Yorkshire*, this seeming to us the most convenient, as it shows at a glance every known British species, and those amongst them that occur in our district.

Class 1. MAMMALIA.

Sub-class *MONODELPHIA.*

Order **CHIROPTERA.**

Sub-order *MICROCHIROPTERA.*

Family **RHINOLOPHIDÆ.**

1. Rhinolophus hipposideros, *Bechst.* Lesser Horseshoe Bat.
2. Rhinolophus ferrum-equinum, *Schreb.* Greater Horseshoe Bat.

Family **VESPERTILIONIDÆ.**

3. Synotus barbastellus, *Schreb.* Barbastelle.
4. Plecotus auritus, *L.* Long-eared Bat.
5. Vesperugo serotinus, *Schreb.* Serotine.
6. Vesperugo discolor, *Natterer.* Particoloured Bat.
7. Vesperugo noctula, *Schreb.* Noctule.
8. Vesperugo Leisleri, *Kuhl.* Hairy-armed Bat.
9. Vesperugo pipistrellus, *Schreb.* Pipistrelle.

Not so rare as formerly supposed, and certainly has been more observed of late years.

Rare throughout Caithness, especially in the barer portions. Mr. Wm. Reid has never heard of more than one or two of this species having been found in the county, until

September 1885, "when Mr. Sutherland, sailmaker and bird-stuffer, told me that as he was repairing the roof of a wooden shed at his house, late in the evening, he saw a bat flying about, and watched it for fifteen or twenty minutes, but could not catch it; he never saw one before."

10. Vespertilio dasycneme, *Boie.*
11. Vespertilio daubentonii, *Leisler.* Daubenton's Bat.
12. Vespertilio nattereri, *Kuhl.* Reddish-grey Bat.
13. Vespertilio bechsteinii, *Leisl.* Bechstein's Bat.
14. Vespertilio murinus, *Schreb.* Mouse-coloured Bat.
15. Vespertilio mystacinus, *Leisl.* Whiskered Bat.

Order **INSECTIVORA.**

Family **ERINACEIDÆ.**

16. Erinaceus europæus, *L.* The Hedgehog.

Obs.—Is still unknown in the west, and, so far as known to us, in all other parts of the counties. Though pet specimens have been introduced, and have escaped, there is no evidence that they have established themselves in a wild state.

Family **TALPIDÆ.**

17. Talpa europæa, *L.* Mole.

Still on the increase in Sutherland. In 1843 it was rare in Durness, and, according to Alston, only found on the western slope of Ben Hope. Abundant in Assynt, less so in Edderachyllis, where the ground is rockier and there are fewer low-lying pastures. They have since become much commoner about the shores of Loch Eriboll, as we are informed by Mr. B. N. Peach (to date of 1884). In some parts their existence for a number of years is evidenced by

the old turf-covered molehills. In the east regular mole-trappers are employed to keep down these so-called pests.

The mole is very abundant in Caithness, wherever the ground is suitable, and we have, besides our own observation of this, the corroborative statements of our correspondents.

Family **SORICIDÆ.**

18. **Sorex vulgaris,** (*L.*) **Common Shrew.**

Common to both counties.

19. **Sorex minutus,** (*L.*) **Lesser Shrew.**

20. **Crossopus fodiens,** (*Pallas*). **Water Shrew.**

Is not rare in Sutherland, but its retiring habits render its numbers difficult to ascertain. It frequents the limestone burns and rivers of Assynt, and we have seen one obtained on the Inver river in 1883. In Mr. Alston's paper on "The Mammals of Sutherland," it is stated that the dark variety, formerly separated as *C. remifer*, does not appear to be found within the county, although common in many parts of Scotland. The one we saw, however, in 1883 belonged to the dark race, the dark colour passing entirely over the under side. Mr. Houstoun writes from Kintradwell, that he has twice seen the water shrew alive, the first time both in the water and on land, and the second time on land only, and has, on three separate occasions, got dead specimens, evidently dropped by a cat, but perfect and apparently uninjured.

In 1885, also, on the sandy links of Culgower, in Loth, one was caught in a trap near the mouth of a farm drain, on the 7th July. It was white underneath, the dark colour appearing through the white. Another was seen at Golspie.

Regarding the carnivorous propensities of the water shrew there appears to be no reasonable doubt, and we have only

to turn to the pages of Bell's *British Quadrupeds* to be confirmed in the opinion. The following is a contribution to this part of the subject. One of the Duke of Sutherland's gamekeepers, who takes special charge of the hatching-boxes for salmon, near Inchnadamph, stated that after he had liberated the young fry into the ditch-like burn of clear limestone water which runs past the hatching-house, he saw what he believed was a water-rat, and on firing, shot a water shrew which he found had been eating the young fish in this pool. Harvie-Brown believes he was the first person to draw the said keeper's attention to the existence of the species on the limestone burns of Assynt; and the keepers also on the Inver river are now acquainted with it. But at the same time it would be unfair to lay all the blame for the destruction of fry upon this interesting little animal,—which, no doubt, is much more numerous over Scotland than is generally supposed,—because there is a water-bug well known to us which is probably much more numerous and much more destructive to fry than Sorex is. Besides, Sorex, being an insect-feeder too, should perhaps be allowed to take his fill of fry, in consideration of his anti-coleopteric inclinations. We cannot, at present, positively make affirmation as to the presence of this beetle in Sutherland limestone streams, but we can certify to their carnivorous propensities, as we have watched them in fresh-water aquaria in our own house at Dunipace.

As long ago as the days of Pennant, the water shrew is spoken of thus in the Caledonian Zoology: "It is the Lavellan of some places, supposed to be noxious to animals"; but in his British Zoology the author expresses himself with somewhat less confidence. Speaking of this animal he says: "I *imagine* it to be the same that the inhabitants of Sutherland call the water mole, and those of Caithness the Lavellan, which the last imagine poisons their cattle," etc. Again, Sibbald (*Scotia Illustrata*,

p. 11) says: "Lavellan, animal in Cathanesia frequens, in aquis degit, capite mustelae sylvestri simile, ejusdemque coloris bestia est." Fleming asks: "What then is the Lavellan of Caithness? Should it be considered as the water Shrew?"—(Wernerian Society's *Memoirs*, vol. ii. p. 1.) Certainly we think so, and that the species has belonged to Caithness since Pennant's time. Others, however, assign the name to a lizard.

Yet the presence of this interesting species was scarcely acknowledged until, during a very heavy flood in the Wick river, one was caught close to the town of Wick on October 23d, 1872, and, according to Mr. Reid, several more were seen. Previous to this Mr. Reid had seen a few along the sedgy sides of the same river, but otherwise it appears to have been overlooked. The following is Mr. Reid's own account of their occurrence during the flood:—

"A few years after I first observed them, we had a great spate in our river, which overflowed its banks for a long distance. It was in harvest-time, and brought down quantities of meadow-hay and sheaves, and stooks of corn.

"I was standing watching the flood and the stuff carried down by it, and observed on the top of several of the grass- and corn-heaps, which had clung together, small black objects. As they neared the stone walls at the estuary, these objects left their float and swam for the piers, and got into holes and out of sight. At a little risk of a ducking, I got down and caught one, and carried it home with me, and kept it for a few days, when it died, I suppose for want of its proper food. There must have been great numbers of the poor little things lost on this occasion, for those that escaped drowning would doubtless more miserably perish for want of food, as they might never get back to their usual feeding-ground. Great numbers of frogs were carried down by the same flood, and next day I found scores of these dead on the sea-beach, the salt water doubtless having done for them."

Order **CARNIVORA.**

Sub-order *FISSIPEDIA.*

Family **FELIDÆ.**[1]

21. Felis catus, *L.* Wild-Cat.

Becoming extremely rare in Assynt during the last decade, but it is still not uncommon in the Reay Forest, where it is preserved by the Duke of Westminster. One very large one was killed in Assynt in 1881. Between March 1831 and March 1834, as recorded by Selby, 901 wild-cats, martens, and foumarts were destroyed. According to a list of vermin killed on Dunrobin grounds, house-cats and wild-cats are distinguished, and six is the number of the latter killed between 1873 and 1880. One keeper in Assynt killed no less than twenty-six wild-cats between 1869 and 1880, but of these only three during the last six years. Another keeper killed ten between 1870 and 1873, but no more until the winter of 1879-80, when he killed four, one of which is described as a monster. These notes very clearly indicate the process of extermination, and we have many other lists which show the same decline. In the east of the county, though not yet extinct, it is also very rare, though we hear of one being caught occasionally; and it is still found, though rarely, in the Tongue district.

In Caithness the wild-cat is recorded as occasionally seen at the date of the *New Statistical Account* (1845). Mr. Reid says, it is rare or quite absent now from the level portions, but may linger near the Sutherland march in Berriedale and Strathmore. "The only undoubted case of its occurrence in the parish of Wick was that of a genuine wild-cat having been got at a small house at Stirkoke, a few miles from Wick. Sergeant Sandison, birdstuffer, saw the specimen—the skin nailed upon a door to dry. The gamekeeper who had shot it and found the young ones,

told him he took them home to try and rear them, but that they were so wild they would not eat meat or take any food, and died. Mr. Sandison has stuffed several Sutherland wild-cats, and knows them well, and says that there is no mistake that the Stirkoke wild-cat was a genuine specimen" (W. Reid *in lit.*). In the Dunbeath Lists of Vermin supplied to us by Mr. J. H. Sinclair, two wild-cats are included as killed in 1875, one in 1876, and the last on the list in 1877.

Family **CANIDÆ.**

Canis lupus, *L.* **Wolf.**

22. **Vulpes Vulgaris,** *Briss.* **Fox.**

Very plentiful, a regular crop appearing every year, and affording no mean addition—in the form of premiums—to the gamekeepers' salaries, besides employing regular fox-hunters. £1 is given for an old dog, £2 for a vixen, and 10s. each for cubs. Between 1831 and 1834 premiums were paid for 239 foxes on the Sutherland estates; in Assynt and Durness for 156 between 1870 and 1879; in the Reay Forest and Glen Dhu, 145 between 1866 and 1880 by one return, and by another, in the Reay Forest between 1873 and 1879, 164; or, in all, from Reay Forest and Glen Dhu in that time, 309. In Assynt, on Mr. Whitbread's shooting, by one keeper alone, no less than 53 between 1869 and 1880. Between 1866 and 1869 340 were killed. On Dunrobin 60 Foxes were killed between 1873 and 1880. In Assynt also, on another beat, another man got 11 foxes between May 1879 and May 1880. Still very abundant in the East, and in normal numbers around Tongue, neither increase nor decrease being observable.

Is obtained between Caithness and Sutherland. Mr. William Reid has never himself met with it around Wick nor elsewhere in the north of the county, and it does not

appear to be common on the Dunbeath Moors—only one old Fox appearing in the Vermin Lists, and that so long ago as 1875.

Family **MUSTELIDÆ.**

23. **Martes abietum** (*Ray*). **Marten.**

The marten appears now to be of rarer occurrence throughout Scotland than the wild-cat, being extinct in many places still frequented by the latter, but, curiously enough, has survived over a larger area up to a later date; that is to say, that while the boundaries of the country at present inhabited by the wild-cat are easily defined, and are gradually contracting, the occurrences of the marten are more sporadic, often turning up in localities far distant from one another, where no records had previously occurred for many years. The marten being extremely unsuspicious of a baited trap, falls an easy prey to the professional vermin-killer. In Assynt it is now very rare, but in 1876, in the Reay Forest, one keeper had fifteen skins awaiting the annual arrival of the furrier's traveller. Two were got at Gualin in 1882, but they are very scarce there, though possibly less so than elsewhere in the county. In the east they have not been known for many years, and are almost, if not quite, extinct in the Tongue district. One was got at Inchnadamph in 1885.

We have no record of this species from Caithness beyond that mentioned in the Vermin List in the Appendix.

24. **Mustela vulgaris**, *L.* **Common Weasel.**

Not so abundant as the stoat, and not, so far as is known, ascending the hills to any great altitude, preferring the proximity of houses and farmyards.

Not nearly so abundant in Caithness as the stoat (*vide* Shearer, writing in 1871).

In this county the two species are looked upon as the same animal, and both receive the local name of "Whitteret" or "Futteret."

25. Mustela erminea (*L.*). Stoat or Ermine.

Very plentiful, and has even been seen on the summits of the highest mountains.[1]

Notwithstanding the war of extermination so constantly carried on, the stoat is steadily on the increase, and this is very probably coincident with the increase of rabbits. This, at least, was the case in 1880. Not abundant in the Tongue district.

In Caithness commoner than the weasel, but both marked by Mr. Reid as "seen and got occasionally."

26. Mustela putorius, *L.* Polecat or Foumart.

The same causes which have lessened the numbers of the marten in Sutherland have operated in the case of the polecat. Rabbit-trapping has proved fatal to it; for whilst the increase of rabbits has provided abundance of food, it has been the indirect means of causing the decrease of the species by the agency of steel traps. Inland localities, formerly occupied by polecats, have been deserted by them, for, drawing down towards the sandy barrens to prey upon the rabbits, they themselves became an easy prey. Careful inquiries have elicited the fact that a few polecats still remain at certain sea-shore localities, but only where rabbits do *not* abound and are *not* systematically trapped. An occasional one is still obtained in the Tongue district, but the species is decidedly rare there. In Glen Cassley one was trapped in the spring of 1885, and one at Inchnadamph by J. Munro.

[1] Mr. Omond records the appearance of a stoat in the depth of winter of 1883-84 on the summit of Ben Nevis.

In Caithness the polecat was, according to Mr. Shearer,—as we see from the cuttings sent us by Mr. Reid (*John o' Groat Journal*, 1871),—much more abundant than was generally supposed at that time. At present, Mr. Wm. Reid marks it as less common, and as "seen and got occa sionally only," and it is evidently a scarce species on the grouse muirs of Dunbeath, none appearing in the Vermin Lists between 1875 and 1881.

27. **Lutra vulgaris**, *Erxl.* **Otter.**

Much scarcer in the east of Sutherland from incessant persecution. From 1831 to 1834 premiums were paid for 263 otters killed on the Sutherland estates alone. In Assynt and Durness only three are included between 1870 and 1879; none between 1866 and 1880 on Glen Dhu farm or Reay Forest; but in Assynt, on Mr. Whitbread's shootings, twelve were killed by one trapper between 1869 and 1880. We have no record of otters amongst vermin lists from Dunrobin; but records of otters killed do not perhaps distinctly point out their distribution or comparative abundance in different districts, for we know they still frequent the Brora river and Lothbeg burn; near the latter place, indeed, one was caught by rabbit-trappers on the Crakaig farm at the beginning of 1884; and we ourselves saw a fine one in Loch Brora on the 21st of February of the same year.

In Caithness the otter is still not rare, frequenting both the cave-tunnelled coast and the several salmon rivers, occasionally visiting the inland lochs, and breeding not uncommonly, according to Mr. Reid, in the rocks near the breakwater at Wick harbour. Mr. Reid writes further:—"A few years since, a nest of young ones was got in a hole in the back of our harbour, one of which was tamed. He was called *Leopold*, and would follow his master, Allan M'Leod, anywhere. I accompanied both on

a fishing excursion one day, and was highly delighted with the graceful movements of Leopold when hunting for trout in a stream and mill-dam. He knew the route to these fishing-grounds, and would not follow, but led the way; and in going and coming, passing a flesher's shop, he regularly called and got a piece of beafsteak, which he seemed to enjoy much, though taking a long time to masticate it. Leopold was sold to the Rothesay aquarium, where he was much admired, but, by some accident, lost his life shortly afterwards." [1]

28. **Meles taxus,** *Schreb.* **Badger.**

Still found, but in decreasing numbers and in more restricted areas. Previous to 1867 no vermin were killed in the Reay Forest, but after 1872 premiums were paid by Mr. M'Iver, the factor. The badger's name is quite absent from lists of vermin killed in Assynt and Durness between 1870 and 1879, also from Reay Forest lists between 1866 and 1880, and from the Assynt lists. One only is included in the Dunrobin list between 1873 and 1880. We know of no part of Sutherland where it can be called abundant, but the absence of its name in all cases must not be held as invariably indicative of its absence in the flesh, as in some parts, very wisely, no premiums are paid for badgers. At one time the "Brocair" or badger-hunter was a well-known man; now he is never heard of, and is replaced in person and in name by the fox-hunter. Supposed to be extinct, or nearly so, in the Tongue district, none having been heard of during the last seventeen years, and only two seen by Mr. Crawford during twenty-five years.

We have no record of this species from Caithness.

[1] We have witnessed also how wonderfully tame and familiar an otter may become, if taken young and trained, and we remember one in the county of Stirlingshire, belonging to a local fisherman in Carron Ironworks, which fished for his master in the river Carron.

Sub-order *PINNIPEDIA*.

Family **TRICHECHIDÆ**.

29. **Trichechus rosmarus**, *L.* **Walrus.**

Family **PHOCIDÆ**.

30. **Phoca vitulina**, *L.* **Common Seal.**

Not uncommon at some localities, especially in the firths of the north coast, and occurring all along the coasts in the west. Another resort on the east coast is a sandbank at the entrance of the Dornoch Firth, visible from the town of Tain. Here they used to lie in large numbers, though lately a good many have been killed with punt guns, one man killing three and wounding two with one shot: these latter were afterwards found. Another resort is the Little Ferry, where they come in and out with the tide.

"Common, but not nearly so abundant as in my younger days." (William Reid.) Mr. Reid continues: "Several specimens have been got within a short time by our fishermen, a considerable distance out at sea, by their having been hooked or entangled on their fishing gear;" and in January 1886 Mr. Reid relates how one was caught by a "murderer" or "ripper," whilst fishing for cod, by a Captain Robert Taylor. Low, in his *Fauna Orcadensis* (p. 18), says: "Seals seem to be subject to a plague or murrain. About four years ago they drove ashore around our coasts in scores; likewise in Caithness many of them were found dead." Low also mentions the Pightland (Pentland) Skerries as a place where seals abounded (1813).

31. **Phoca hispida**, *Schreb.* **Ringed or Marbled Seal.**

32. **Phoca grælandica**, *Fabricius.* **Harp Seal.**

Mr. Houstoun tells us he has killed a specimen of this seal at Kintradwell; we saw portions of its skin after it had been

preserved and cut up. This was probably previous to 1870. Mr. Houstoun is an experienced seal-shooter, but it is a pity that such a valuable and interesting addition to the British marine mammalia should not have been more carefully preserved. Personally, we feel certain that the Harp seal has occurred several times in Scotland, and we have ourselves shot one in the Hebrides, which was, however, lost to us, and we have evidence of others having occurred. Unfortunately none have been preserved.

Genus HALICHÆRUS.

33. **Halichærus gryphus,** (*Fabricius.*) **Grey Seal.**

Fairly common along the east coast, especially where there are any rocks jutting into the sea suitable for them to lie on. One such place is Lothbeg Point, where Mr. Houstoun of Kintradwell has shot many, the small firth seal being the rarer here. They blockade the mouth of the Brora, levying black-mail on the migrating salmonidæ.

Grey Seals also occur in some numbers on Eilean-nan-roan, off the Kyle of Tongue, where specimens have been seen over 8 feet long. They are most numerous on the outer island. At Souliskeir, to the north of Cape Wrath, they were once abundant, and parties of fishermen used to go from Orkney and from the north Sutherland coast to kill them in October. These raids have ceased within the last fifteen or twenty years, as we are informed by Mr. J. Crawford. Bag-net fishermen are in the habit of baiting their salmon nets with strychnined bodies of salmon, and thus are reported to destroy many seals which harry the nets of their fish. Surely this is a custom which ought to be discountenanced. This is done at the mouth of the river Naver.

Not so common as formerly, but still breeds in the caves along the Caithness coast. In Mr. Reid's younger days numbers

were killed in these caves, and even yet some few are obtained there. These caves are often of great length, and only to be entered in the very smoothest weather; at their further end there is generally a small strip of white sand, and on this the young seals are found lying, and perhaps one or two adults.

34. **Cystophora cristata,** (*Erxl.*) **Hooded Seal.**

Order **CETACEA.**

Sub-order *MYSTACOCETI.*

Family **BALÆNIDÆ.**

35. **Balæna biscayensis,** *Eschricht.* **Atlantic Right Whale.**

Family **BALÆNOPTERIDÆ.**

36. **Megaptera longimana,** *Rudolph.* **Hump-backed Whale.**

In a long letter to *Land and Water* from Mr. W. Reid of Wick, that gentleman gives an account of a whale of this species which was brought into Wick harbour by the crew of a Banff boat, who had picked it up dead at sea in April 1871. Professor Flower identified it as the hump-backed whale from Mr. Reid's description of it. It was a male, measuring 48 feet in length and the same in circumference.

Mr. Reid gives a very interesting account of this animal in the paper referred to, but it is too long to insert here.

37. **Balænoptera musculus,** (*L.*) **Common Rorqual.**

A specimen of this whale was stranded alive near Wick in June 1869. It was a male, and measured 66 feet in length. The carcass after being "flensed" at Wick, drifted down to Golspie, where parts of it were secured for Professor Struthers (to whom we are indebted for this communication) by Dr. Gunn, and Dr. Souter of Golspie.

In a communication from Mr. Reid, he says as follows:—"I am a little at a loss about the whales, seeing that Professor Bell's, and those of Fleming, Low, etc., are differently named. Between Noss Head and Wick there is an opening between two ledges of rock with deep water; it is narrow, but wide enough for a whale to enter, but when he does so, he finds no passage through: it is a *cul-de-sac.* In my recollection no less than four specimens of large size, 65 to 85 feet long, have been captured here. Two of them, since my return to Wick, I have seen and examined. I believe that both were Rorquals, indeed I am very sure of that—the largest the Great Northern Rorqual—the smaller *B. minor.* It is possible, however, that the smaller was the same species as the larger, but not full-grown. All these large whales, which are seen every herring-fishing season in great numbers blowing among the herrings, are called 'Finners,' from having a large dorsal fin on the back.

"The last whale got in the place above mentioned was on the 26th September 1871. It was sold by public roup for £35. These whales are not rich in blubber, and their whalebone is only a few inches long, and is worth little or nothing: this specimen measured about 70 feet. It was photographed by our local photographer."

A larger specimen was caught in the same place, either just before or in 1867, and was said to be 85 feet long. Another smaller specimen was caught there when Mr. Reid was in Orkney, and he remembers one being taken there when he was a boy. Mr. Reid justly remarks that when so many have been taken in such a small place, it shows how abundant they must be on the coast.

38. **Balænoptera sibbaldii,** (*Gray.*) **Sibbald's Rorqual.**

39. **Balænoptera borealis,** *Less.* **Rudolph's Rorqual.**

40. **Balænoptera rostrata,** (*Fab.*) **Lesser Rorqual.**

Sub-order *ODONTOCETI.*

Family **PHYSETERIDÆ.**

41. **Physeter macrocephalus,** *L.* **Sperm Whale.**

"The much decomposed carcass of a large male was washed ashore in Caithness-shire, near Thurso, in July 1863, and its skeleton, which was presented by Captain Macdonald to the British Museum, is described by Professor Flower in his memoir."—(Bell, *Brit. Quad.*, 2d Ed., p. 418.)

42. **Hyperoödon rostratum,** (*Chemnitz.*) **Common Beaked-Whale.**

43. **Hyperoödon latifrons,** *Gray.* **Broad-fronted Beaked-Whale.**

44. **Zyphius cavirostris,** *Cuv.* **Cuvier's Whale.**

45. **Mesoplodon sowerbiensis,** (*Blainville.*) **Sowerby's Whale.**

Family **DELPHINIDÆ.**

46. **Monodon monocerus,** *L.* **Narwhal.**

47. **Delphinapterus leucas,** (*Pall.*) **White Whale or Beluga.**

In 1880 a specimen of this species was repeatedly seen in the Kyle of Tongue in August, as reported to us by Mr. J. Crawford of Tongue House, and there are other records of its occurrence on the north coast of Caithness (*vide* Bell, *Brit. Quad.* p. 441). A specimen was obtained at the Little Ferry on the 9th of June 1879, having been entangled in the gearing of the salmon stake-nets (*P. Z. S.*, 1879, pp. 667-9). It is now stuffed and in the Dunrobin Museum.

Professor Struthers has kindly sent us a note of a Beluga or white whale taken alive in the salmon-nets at Dunbeath, on April 26th, 1884. It was obtained for the Professor by Mr. Adam Mackay, and forwarded to Aberdeen on April

29th. Being quite fresh, photographs were taken of it at the University by Mr. Wilson of Aberdeen.

Colour pure white; length 12½ feet; a female. The skeleton is preserved in the Anatomical Museum of Aberdeen University.

48. **Orca gladiator**, (*Lacep.*) **Killer-Grampus.**

49. **Grampus griseus**, (*G. Cuvier.*) **Risso's Grampus.**

50. **Globicephalus melas**, (*Trail.*) **The Pilot Whale.**

Also found on the coasts, and there is one in the Dunrobin Museum. One was stranded on the Melness side of the Kyle of Tongue about five years ago. It measured 15 feet in length. This was about midsummer.

Mentioned by Mr. Reid as occurring in Caithness.

51. **Phocæna communis**, *F. Cuv.* **Porpoise.**

Visits the coasts of both counties in great abundance.

52. **Delphinus delphis**, *L.* **Common Dolphin.**

53. **Delphinus tursio**, *Fab.* **Bottle-nosed Dolphin.**

54. **Delphinus acutus**, *Gray.* **White-sided Dolphin.**

55. **Delphinus albirostris**, *Gray.* **White-beaked Dolphin.**

Order **UNGULATA**

Family **SUIDÆ.**

Sus scrofa, *L.* **Wild Boar.**

Order **RUMINANTIA.**

Family **CERVIDÆ.**

Rangifer tarandus, *L.* **Reindeer.**

56. Cervus elephus, *L.* Red-Deer.

It is stated that 284 stags and 32 hinds were killed in 1880 in Sutherland. How far these figures are correct we are unable to say.

The principal forests are Dirrie-Chatt or Dunrobin in the east, and Dirrie-More or Reay Forest in the west, besides, of later years, other afforested ground in Assynt. There is evidence that formerly very large heads occurred in Sutherland (*Lays of the Deer Forest*, vol. ii. p. 145), and the Dunrobin Museum contains a very fine head, with both horns deeply cupped, and of great spread and thickness of beam. The Duke of Westminster at the present time is striving to improve the heads in the Reay Forest, and with singular and rare sportsmanship, forbids the killing of the finer adult stags. A decided difference has already made itself manifest in the improvement of both body and antlers. No doubt these grand heads were commoner in the days when Sutherland was covered with oak and pine timber, remains of which are still visible in the peat-mosses. But when it is believed that there is not at present a tree in Sutherland which numbers a hundred years of age, we must go a long way back to localise them in time.

What the Duke of Westminster is doing to improve the stags in the west, the Duke of Sutherland is doing in the east, and, except a few killed by himself or Lord Stafford, no good heads are allowed to be shot in Dunrobin, under a fine of £1 to the stalker who allows such to be done. At the present time deer are spread throughout the whole county, from the north-east corner of the parish of Reay to the woods of Dornoch. It is worthy of reference here, what has been related of the great emigration of deer out of the Reay country after the first "head" of sheep had been there introduced (vide *Lays of the Deer Forest*, vol. ii. p. 146).

On the top of the Little Ben Griam is still to be seen

the remains of an old stone dyke, and one wonders what could be the use of such a thing in such an apparently useless place for one; this is all that is left of what once was a deer-trap. The deer were driven up the hill between the two dykes, which are very wide apart at the entrance, and then gradually contracted, ending in a regular *cul-de-sac;* and there being no escape, unless it were over a precipice, the unfortunate animals were then slaughtered. Mr. Houstoun tells us that there is a very similar trap in the Dunrobin Forest on the rocky hill south of Cor Eshach; nor, do we believe, are these the only two in the county.

In Brawl Castle are some very fine red-deer heads, which have been taken out of the peat-mosses. One obtained at Dorrery Hill about twenty years ago numbers thirteen points, and there are many others in the collection, but, unfortunately, no precise records of them have been kept. Of these, several number thirteen and fourteen points. The only forest in the county is that of the Duke of Portland, at Langwell, and the original part has been largely augmented within the last five or six years by the addition of Braemore. There are also a few deer at Sandside in the Reay district, in the north-west of the county, but the greater part of Caithness is ill adapted for them, and they rarely leave the forest for the flat flow-ground. They have, however, been seen as far out as Wick (*New Stat. Acc.*, 1845), whilst Mr. Reid informs us that a full-grown stag was seen for a day or two last spring (1885) on the flat ground of Canisbay, within a few miles of John o' Groat's.

57. **Cervus dama**, *L.* **Fallow-Deer.**

In a letter from Sheriff Mackenzie, dated 24th February 1884, he says of the fallow-deer:—

"They must have been brought there (Dornoch woods) in Dempster's time, more than forty years ago, and I have

heard Mr. Dempster remark, when we were beating the woods for them, that there was only another estate in Scotland where they were to be found going about in a wild state, and that was somewhere in Perthshire, if I remember rightly. I don't think they are so numerous now as then."

Fallow-deer were introduced at Rosehall in the winter of 1876 or spring of 1877. Buckley was there, and saw them turned out at midnight. Since then they have increased but little, the two late hard winters having killed off numbers. Their heads are miserable, and they have rapidly deteriorated of late years.

58. **Capreolus caprea,** (*Gray.*) **Roe-Deer.**

Common in all suitable localities, and increasing in number since planting became more general. The late severe winters put a check, however, on their increase, but they seem again to have in great measure recovered. Even in the isolated birch-woods of the interior of the county roe are found, but they rarely increase, even when not killed, in such situations.

Abundant at Berriedale and Langwell, but does not appear to extend to any part of the less-wooded areas.

Family **BOVIDÆ.**

59. **Bos taurus,** *L.* **Wild White Cattle.**

Order **RODENTIA.**

Family **SCIURIDÆ.**

60. **Sciurus vulgaris,** *L.* **Squirrel.**

Once present in Sutherland (cf. Sir R. Gordon's *Earldom of*

Sutherland to the year 1630, where it is included in a list of animals found in the county), and became extinct. The latest record we have of the squirrel occurring anywhere in the north of Scotland which could possibly have belonged to the aboriginal stock, dates 1792 (*Old Statistical Account of Scotland,* 1792, vol. iii. p. 514), which record is repeated *word for word* in the *New Statistical Account,* dating 1842. It most probably became extinct after or during the severe winter of 1795, and the subsequent record was merely a statement not brought up to date. As regards its reappearance, we quote directly from Harvie-Brown's Essay on "The Squirrel in Scotland," as in that essay the subject, we believe, is pretty well thrashed out.

"The squirrel reappeared in the county of Sutherland in 1859 at Clashmore, on the authority of Mr. Thomas Mackenzie (vide *Proc. Nat. Hist. Soc. Glasg.*, vol. iii. p. 229; also *Scottish Naturalist*, vol. i. p. 82), and he believes that the first squirrels entered the county across Bonar Bridge. It was not, however, until after the railway bridge was built at Invershin, in 1869, that squirrels became plentiful in the east of Sutherland." Since then they have increased largely, and are now firmly established in the east of the county. From Dunrobin we have the following returns of squirrels killed between 1873 and 1880, which admirably shows the rapidity with which the species increases. In 1873, 2 were killed; in 1875, 75; in 1876, 47; in 1877, 12; in 1878, 284; in 1879, 332; in 1880, 190;—total in seven years, 942.

Not known in Caithness, unless it has lately strayed or extended its range into Berriedale.[1]

[1] See "The History of the Squirrel in Great Britain," *Proc. Royal Physical Soc. of Edinburgh*, 1880-81, p. 182: Sutherland and Caithness.

Family **CASTORIDÆ.**

Castor fiber, *L.* **European Beaver.**

Family **MYOXIDÆ.**

61. **Muscardinus avellanarius,** (*L.*) **Dormouse.**

Family **MURIDÆ.**

62. **Mus minutus,** *Pallas.* **Harvest Mouse.**

63. **Mus sylvaticus,** *L.* **Wood Mouse.**

We have only once observed this species in a birch-wood on the side of Loch Shin, but Selby mentions it as common so long ago as 1834, and it is common in the east of the county.

Very common in Caithness (*fide* W. Reid).

64. **Mus musculus,** *L.* **House Mouse.**

Common in both counties.

65. **Mus rattus,** *L.* **Black Rat.**

The only authentic occurrence we are able to record, is on the authority of Dr. Joass, who informed us that a single specimen was shot two miles west of Golspie in 1879, about a mile from the nearest houses, which would therefore be the sea-port of the Ferry. Unfortunately, it was too far gone for preservation for the Museum. We have innumerable records, of varying value, of the black rat from many parts of Scotland, the above being the only one from Sutherland. As the black water vole is *very common,* it can hardly have been confounded in this case.

No reliable records from Caithness.

66. **Mus decumanus**, *Pallas.* **Brown Rat.**

Abundant, but for the most part confined to the coast districts, though occasionally found at some inland localities; abundant on many islands off the coast, but quite absent from others. Handa is infested with them, and there is evidence also of their presence on the Badcall Islands. We found no trace of them on Bulgie Island, nor on Garbh Island.

Abundant in Caithness.

Family **ARVICOLIDÆ.**

67. **Arvicola amphibius**, (*L.*) **Water Vole.**

Abundant both on the clear rapid limestone rivers of Assynt and on the more sluggish streams. The black variety is, in our opinion, more abundant than the brown in the west, and is at least equally common in the east, where it haunts every burn except those that are too rocky. This interesting species appears to thrive well amongst the rocky limestone formation, finding ready shelter in the innumerable cracks and passages through the rock, but we have not met with it in the very rocky burns of other formations. Mr. Ben. N. Peach observed the black variety commonly in Durness. They are common also in Strath Shinary, through which the river Shinary flows into Loch Sandwood. The common vole is easily tamed, and makes a cleanly and interesting pet.

Until lately Mr. Wm. Reid believed there was only the brown variety, but a young angler, when out fishing in a small feeder of the Wick river, came upon a number of black ones, some of which he killed, and he gave Mr. Reid the skin of one. A part of this skin sent by Mr. Reid for our inspection does not appear quite so black as many others we have examined, but is much blacker than the pure brown

variety. Brown and black hairs are mixed on the under parts to a greater extent than usual, and, as in all specimens, this one is blacker on the back.

68. **Arvicola agrestis,** *De Selys.* **Common Field Vole.**

Common. We have seen it often in the limestone district, and occasionally in the caverns of the limestone rock, where we once came across a large store of food, which must have lasted past the winter months. The owner scuttled out from its midst near the back of the largest cave, narrowly escaping capture. Also common in the east of the county.

Mr. Reid never met with this species in his youth, when much more frequently out among the hills and fields than now, and,—says Mr. Reid,—"only within a few years back did I see a specimen of it. A gentleman brought me the specimen to see if I knew it. He found it in his garden, and he had never seen its like before. You know," adds Mr. Reid, "how common these are in Orkney, where their tracks round about Kirkwall can be seen for long distances, Baikie and Heddle say miles."

69. **Arvicola glareolus,** (*Schreb.*) **Red Field Vole.**

Obs.—We have no record of the red field vole having occurred in either county. We mention the negative, as we think it possibly does occur though undiscovered.

Family **LEPORIDÆ.**

70. **Lepus europeus,** *Pall.* **Common Hare.**

The brown hare, as it is called in the Highlands, is pretty plentiful in the east of the county, frequenting indifferently the cultivated land and the heather that borders it. When

living in the latter place, it is supposed to cross with *L. variabilis*, and certainly we have seen hares that had every appearance of being such hybrids.

Said to have been common in the lower lands and the limestone ranges of Assynt in Selby's time. It is now extremely rare, if not extinct there. We have only seen two examples during seventeen years' knowledge of Assynt, and these both on the same day; but in 1885 a few reappeared in the Loanan Strath, near Inchnadamph.

Very common in Caithness (*fide* W. Reid).

71. Lepus variabilis, *Pallas.* Mountain Hare.

The white hare has been gradually decreasing in numbers for some years past. There are no hills in Assynt at all famous for the numbers of these creatures, but there is no doubt that they were much more plentiful only some sixteen or twenty years ago, and within our own recollection, than they are now. Persistent shooting has in some cases had to answer for this scarcity. At one time the two Bens Griam were plentifully supplied with hares, but several thousands having been killed off these hills alone some years ago, the stock did not get up for many seasons after; now, however (1885), they are becoming much more numerous, though still not up to their former abundance. Since the larger shootings were broken up in 1873, each lessee used in many cases to allow his keeper to kill hares in the winter, and as hares generally come down from the higher grounds at that time, far more were killed than belonged by rights to the ground; and as this has now been going on for several years, and during that time we have had two very severe seasons, it is no wonder that white hares were getting scarce. They are, however, gradually getting more abundant again, but seem to be more local than formerly.

In Caithness more abundant on the hills bordering Sutherland than elsewhere.

About hares Mr. Houston writes: "White hares in my recollection were by no means so numerous in Caithness as in Sutherland, and my idea now is, that in the former county the brown and white hares were pretty evenly divided. Caithness is so very flat, the Alpine hare seems to like steep ground, or to lie near such any way. Even in Caithness the white hares seem to keep the more quiet, remote spots, and are not generally found on the cultivated or low flats."

72. Lepus cuniculus, *L.* Rabbit.

Common in the east. Scarce in the west, or at least very local. Common on Handa, where they were introduced about eighteen or twenty years ago. Fairly common about the north shore of Loch Inver; abounding on Rabbit Island (or Eilean-nan-ghael, the Island of Strangers), at the entrance of the Kyle of Tongue, but temporarily decreased there since the severe winters of late years. Old "Robby Ross"—an old residenter at Tongue—told Mr. Crawford that rabbits were introduced to Eilean-nan-ghael by Major M'Kay, brother to Lord Reay, about seventy years ago. We find this island, however, called "Rabbit Island" as early as 1792 in the Old Statistical Account of the county (vol. iii. p. 521). 700 were killed in the Tongue woods in 1880-81. A single rabbit was known to frequent stony broken ground at Far-out Head, near Durness, in 1881-82. How did it come there? Over 12,500 are stated to have been killed in the county of Sutherland in the year 1880, but this return does not probably apply really to the whole county. Rabbits wander far up the straths on the east coast, and at one time there was a large colony near Loch Aricline, at the head of the Helmsdale Strath, which were nearly all killed by one severe winter; this colony, however, has now

recovered, and rabbits are very numerous again, going far up into the Bens Griam (1885).

Common in Caithness. They "abounded" as early as 1815 in the Reay sand-links in the north-west of the county, as also on the links of Duncansbay, Freswick, and Keiss.—(*Agricultural Survey of the County.*)



Class 2. BIRDS.

Sub-class *AVES CARINATÆ.*

Series ÆGITHOGNATHÆ.

Order 1. **PASSERES.**

Sub-order *OSCINES.*

Section 1. OSCINES DENTIROSTRES.

Family **TURDIDÆ.**

1. **Turdus viscivorus,** *L.* **Missel-Thrush.**

Common, and resident in the south-east, and has much increased within the last twenty years; much reduced, however, by the two severe winters of 1878-79 and 1880-81; now again regaining its numbers. Said to have bred at Loch Naver by Selby in 1834.

In the west and north rare, up to 1865, but at that time breeding and increasing as far north as Caithness; now breeding commonly about Rosehall, and reaching as far as Tongue. Said to have bred at Cape Wrath, but this is doubtful. In 1875 we took a nest at Rosehall, the first we had seen in the district, and in 1878 saw the remains of an old one near Loch Inver. Seen commonly since that time, especially about Rosehall, but still not seen in the west. Reported as "quite disappeared" at Tongue in 1881, though before that date "abundant," the severe winters having rapidly decreased their numbers. Can now be only looked upon as occasional at Tongue. In 1886, however, nests were again found near Syre, in Strath Naver, by Savile G. Reid.

A common, though not abundant species. It breeds, however, in most of the woods and plantations, notably at Stirkoke, Hempriggs, Latheronwheel, and Langwell, on the east coast, and Brawl, Forss, etc., on the north (O. MSS., 1868).[1] Marked common even prior to this date (viz., O. and Sh.[2] List, 1862, and in N. S. Acc. 1841).[3]

In 1885 we found them only at Berriedale and Langwell. In the autumn and winter of 1885-86, missel-thrushes were unusually abundant on migration. It will be curious to find if this is followed by any appreciable re-extension of range. (See S. G. Reid's note *supra*, received since the above was penned.)

2. **Turdus musicus**, *L.* **Song-Thrush.**

Resident and common, though one of the species that suffered most in the two before-mentioned severe winters; very common about the older whin-bushes that border the south-east coast-line. Common in the west at Scourie, and especially at Badcall and Loch Inver; common at Tongue until the winter of 1878-79. Reported by Mr. Selby, on information received, to remain all winter at Tongue, on the shore and other low situations, and to resort, as we have been assured, to the higher tops of the mountains, even in mid-winter, to feed on the numerous berries. First observed at Inchnadamph in 1877, where it has since become quite common. In 1881 reported to have been utterly exterminated at Tongue, as indeed was the case throughout a large part of Scotland; the west coast and the Hebrides, however, still holding the usual numbers, owing to the influence of the Gulf Stream upon the climate.

A resident species, and to be met with in tolerable abundance wherever there are plantations, luxuriant hedges, or even furze bushes (O. MSS., 1868).

[1] O. MSS. This stands for the Osborne MSS.

[2] O. and Sh. = Osborne and Shearer's List.

[3] N. S. Acc. = New Statistical Account of Scotland.

Much rarer since 1881. Seen by us at Barrogill and at Wick in the north, and at Dunbeath and Berriedale in the south-east.

3. Turdus iliacus, *L.* Redwing.

Perhaps best described as a common autumn visitant to the east, more rarely remaining through the winter; the flocks that arrive are not nearly so large as those of the fieldfare. On one occasion we were witness to a migration of this and the next species at Glenrossal in the autumn of 1875, large numbers of each arriving all one afternoon, settling for a short time in the trees that fringe the river Cassley, and then passing on; next day few or none were to be seen.

A common winter visitant, and the first of all the Thrush tribe to feel the effects of hard weather; even in ordinarily severe winters, Mr. Osborne mentions having picked up specimens in such an emaciated condition that they could not fly, nor scarcely even hop any distance. Before leaving for the north, both this species and the fieldfare assemble in fine weather in flocks on the tops of the highest trees, and utter a low subdued warbling (O. MSS., 1868).

4. Turdus pilaris, *L.* Fieldfare.

Like the last, more common in autumn than in winter in the south-east, especially of late years, the birds seeming to dread remaining so far north after suffering so terribly from the two late severe winters. We have at times seen very large flocks of fieldfares after their arrival sitting on the hillsides, but these soon after either broke up or went further south, single birds at times remaining behind until severe weather drove them nearer to the coast.

One of the best known and most abundant of winter visitants, from the latter end of October until March or April, and in

some seasons even later. It is somewhat uncertain in its comings and goings, individuals having been known to prolong their stay until May or the beginning of June, and reappearing again in August. Great numbers of these birds perish in snowy weather; and in the protracted frost of January 1867 in particular, a very large proportion of the flocks succumbed to the extreme cold and starvation. In February and March following, they had almost entirely disappeared from this neighbourhood, the survivors betaking themselves to more congenial climes further south; but in April, being then on their way to their summer quarters in the Far North, they reappeared in immense bodies, and at Stirkoke, and one or two other places on the east coast, the flocks appeared to be fully as large as in former years. It roosts either in trees or on the ground (O. MSS., 1868).

5. **Turdus varius**, *Pall.* **White's Thrush.**

Obs.—It is somewhat curious to note that among the very few birds which bear any writing or label, in the collections of Dr. Sinclair, and which are now in the Town Hall at Thurso, there is a White's thrush which bears the legend "Redwing; rare variety; Caithness," as examined by Mr. E. Bidwell, during a visit paid to Caithness in September 1886. There is no White's thrush mentioned in either Dr. Sinclair's list, nor in that given by Dr. Wilson, as having been seen by him in Dr. Sinclair's possession.

6. **Turdus atrigularis**, *Temm.* **Black-throated Thrush.**

7. **Turdus merula**, *L.* **Blackbird.**

Resident; partially migratory, many more appearing during autumn and early spring than during the breeding season. We know of one blackbird—a cock—whose wing, though now quite strong, had been at one time injured at the pinion, and this bird has haunted one particular spot for about five years. Common about Loch Inver, and in sheltered and wooded western situations, but almost un-

known in the interior, and not distinguished by name by the natives from the ring-ouzel. Common at Tongue.

This species, Mr. Osborne remarks, has increased much of late years in consequence of the destruction of birds of prey by game-preservers, as has also the Thrush and other species. Mr. Osborne also remarks that the numbers of native-bred birds are much increased by arrivals in the autumn of vast flocks from Northern Europe. In October 1865 a strong easterly gale brought over enormous numbers of these birds, and Mr. Osborne, in a note to the *Field* (December 5th of that year), says: "In traversing a wide tract of moorland country some eight or ten miles from Wick, and lying along the east coast, blackbirds rose at almost every step, and as on their first being observed they were supposed to be ring-ouzels a few were shot. They proved to be all blackbirds, however, and the most careful observation throughout the day failed to detect the admixture of any allied species. Hens and young birds greatly predominated in this flock" (O. MSS., 1868).

Common in 1885, and seen by us abundantly, amongst other places at Latheronwheel and Dunbeath, and perhaps almost as commonly at Thurso and at Barrogill Castle.

8. **Turdus torquatus**, *L.* **Ring-Ouzel.**

A summer visitant, and spread throughout the whole of the wilder districts of the east, where there is a mixture of rocky hill-sides and burns, amongst which this species delights to nestle. Early in April it gives notice of its arrival by its pleasant whistle (it can scarcely be called a song) being heard in all its accustomed haunts; in late summer it will occasionally enter the gardens with the blackbirds after fruit. Abundant in the west, especially amongst the limestone rocks of Assynt, and along the burns which rush headlong from Ben More. We have taken three "clutches" of eggs in one short afternoon.

At certain points also this species is common close down to the sea, as in the neighbourhood of Tarbat, and between that and Loch Laxford. Wolley gives an interesting description of the taking of a ring-ouzel's nest and three eggs, and shooting the hen, from the nearly perpendicular side of the shaft or pit in the limestone where the river Trailigill runs underground [Wolley's *E.-B.*, iii. p. 281],[1] a locality where we have also known the species to have bred.

Reported by Mr. Osborne as a common though not well-known species, frequenting the stony and hilly districts in the interior of the county, though he has seen it on the sea-coast, and in particular on the north side of Wick Bay, near the iron water spring at "The Head" (O. MSS., 1868).

Not observed by us anywhere in the county until we were crossing the Ord of Caithness. There it appeared commonly. We did not, be it remembered, visit much of the interior of the county in 1885.

9. **Monticola saxatilis**, *L.* **Rock-Thrush.**

Sub-family *CINCLINÆ.*

10. **Cinclus aquaticus**, *Bechst.* **Dipper.**

Common, and resident in all the rivers and burns of the east. When driven out of these by ice, the birds hang about the mouths at the sea-coast, where the water does not freeze. At one time a reward was given for their heads, on the ground that they ate the salmon spawn, but this having been happily disproved, these cheerful birds are left to breed in security and peace; and, partly by our own exertions, the premium has been withdrawn. Fluctuations in numbers occurred in the west of the county owing to these persecutions, but since the premium was withdrawn they have again increased. In one return of "vermin" killed,

[1] Wolley's *E.-B.* = Wolley's Egg-Books.

which we have received, the following were the numbers of water-ouzels killed:—In 1874, 64; in 1875, 86; in 1876, 33; in 1877, 41; in 1878, 75; in 1879, January to June, 54: old and young. Happily *nous avons changé tout cela* and if the premiums were placed on the hooded crows and bag-nets it would be more practical.

It also occurs in suitable localities throughout the central portions of Sutherland, but less numerously than in the west and east. It is also often seen among the rocks of the sea-shore in the west.

The "Water-Craw," as it is termed in Caithness, is to be found on most of the burns and streams of the county, only being driven therefrom during very severe weather, when it betakes itself to the mouths of the tidal rivers. (O. MSS., 1868). Marked common in S. and O.'s List (1862).

In 1885 none of this species was met with by us, not even among the mountainous burns of Berriedale and Dunbeath, but we were assured of their being plentiful. It is not included in the Catalogue of the Welbeck collection.

11. **Cinclus melanogaster**, *C. L. Brehm.* **Black-bellied Dipper.**

Sub-family *SAXICOLINÆ.*

12. **Saxicola œnanthe** (*L.*). **Wheatear.**

Summer visitant, and extremely abundant in the east. Before their departure for the winter the males change their plumage into the more sombre hues of the female. Even in very exposed situations far up in the county, these birds constantly remain as late as October. In Assynt extremely abundant, also especially in the limestone districts, but not so abundant in 1877 as previous to that date. Common also at Durness. We have found them in pairs on the summit of Ben Chaoran (2500 feet above the sea). Least

abundant in the broken ground of the Stoir peninsula and interior parts of Edderachyllis.

Local name "*Jeckedybeet.*" According to Mr. Osborne the first purely insectivorous bird to arrive in Caithness, where it is a well-known and plentiful species, being distributed in the breeding season in pairs all over the county, preferring barren stony moors and open wastes to the richer meadows and cultivated ground, and placing its nest in quarries, under large stones and in dry walls (O. MSS., 1868).

Not observed by us in 1885 to be so common on the northern parts of the county as on the east side.

13. Saxicola albicollis, *Vieill.* Black-eared Chat.

13a. Saxicola deserti, *Rüpp.* Desert Chat.

14. Pratincola rubetra (*L.*). Whin Chat.

A summer visitant; very common in some localities in the east, and going quite into the centre of the county to breed. Local in distribution in the west; plentiful between Lairg and Scourie (E. Rawson, *in lit.*), and seen by us commonly here and there between Rhiconich and Durness. Reported common at Tongue, on Loch Shin and at Lairg, and one seen at Syre (S. G. Reid).

Fairly common in Caithness, though much less known than the Wheatear, probably on account of its extremely shy disposition, and its preference for such situations as have a plentiful growth of low brushwood or furze bushes, which in this county are few and far between (O. MSS., 1868).

Marked "common" in S. and O.'s List prior to 1862; not seen by Harvie-Brown in 1885. Ranges to Caithness, according to Gray (*B. of W. of Scotland*, p. 87).

15. **Pratincola rubicola** (*L.*). **Stone-Chat.**

Resident; pairs are seen scattered throughout the country to the east in every month in the year, though they retire nearer the coast-line as winter approaches; they are unsociable birds, more than two being rarely seen together. In the west more abundant than the next species, but locally distributed. Observed at Altnaharrow in June 1881. Common, and breeding at Tongue (*auct.* J. C.[1]). Also found at Syre (S. G. Reid).

A resident species in the county. The first place Mr. Osborne observed it was in the quarries at Clayquoys. "For some years previously I had been observing the rarer birds of the county, but had not till then met with the stone-chat. The examples referred to were three or four in number, but they disappeared in a day or two, and for two or three years I altogether lost sight of them. Paying a visit, one fine day in the beginning of summer, to that extensive range of furze bushes by the side of the river at Silester, so well known to generations of birds'-nesting schoolboys, I was delighted to find that a whole colony of stone-chats had taken part possession of this famed breeding station, and still further added to its ornithological attractions. For a summer or two afterwards I observed them to be quite as numerous, and then, to whatever cause it might be owing, they disappeared in a body. Some years have now elapsed since I have been in that locality, and am consequently unaware whether or no these erratic visitors have returned to their old quarters. This uncertain and changeable disposition of the stone-chat in regard to locality has been frequently observed and commented on. Specimens have been obtained, however, in other parts of the county, but these, so far as I am aware, only occurred singly or in pairs" (O. MSS., 1868).

[1] J. C. = John Crawford, Esq., late of Tongue.

This species was recorded as occurring rarely at Lybster, one only having been observed there in June 1861. Since Mr. Osborne's observations it has been seen by Mr. W. Reid, and Mr. Harvie-Brown found it at Thurso, and again a single bird at Langwell in 1885.

16. **Ruticilla phœnicurus** (*L.*). **Redstart.**

A summer visitant to the east, and extending its range, as it is now found a considerable distance up several of the straths in the district, where there is sufficient wood for shelter and food. In 1870 it was not such a common bird as it is now in the Dunrobin district. In the north of the county it is reported as rarer in 1877 than formerly, "and none for the last five years," by Mr. J. Crawford, but we have found it increasing of late years in the west of the county, and spreading down the valleys towards the sea. Observed at Altnaharrow in 1881, as early as 1878 near Loch Inver; and bred and reared young at Inchnadamph for the first time in 1880 (MS. of E. R. A.[1]). Proceeding westward, up to 1875 we only remember seeing it on two occasions in the county—once at Loch Awe in the west, and once at Rosehall, but as early as 1834 Selby saw it at the latter locality, and also at Oykel Bridge.

Reported as absent from Inchnadamph, in the west, in June 1885, in which year there was a remarkably cold spring and summer (J. Young, *in lit.*, June 10, 1885).

In 1864 an unusual migration of this species occurred upon the Caithness coast on or about the dates of 8th, 9th, 10th October, with a furious south-east gale, as recorded by Mr. Osborne (*Field*, Jan. 9, 1864).

Until lately a comparatively rare species in Caithness. In May 1867, Mr. Osborne records the capture of a pair near Pulteneytown. In S. and O.'s List it is marked as occasional prior to 1862. It has been reported also from Dunbeath

[1] MS. of E. R. A.=MS. of the late Edward R. Alston.

some years ago by Mr. Peach. After the heavy easterly gale of October 1863, a good many redstarts were observed near Wick, and a few miles to the south. It seems certain that this species is extending its range here as in other parts of Scotland (O. MSS., 1868).[1] Previous to 1862 it is only marked as occasional.

Mr. Reid of Wick has noted it at Ackergill, and we observed it not uncommonly at Langwell in 1885.

17. Ruticilla titys (*Scop.*). Black Redstart.

No record from Sutherland.

Mentioned in Dr. Sinclair's List. Marked as rare in S. and O.'s List (1862).

Mentioned as "occurring" by Mr. Reid of Wick.

Obtained by Mr. Harvie-Brown from the Pentland Skerries on March 31, 1884,—an adult male.

Sub-family *SYLVIINÆ*.

18. Cyanecula wolfi, *C. L. Brehm.* White-spotted Bluethroat.

19. Cyanecula suecica (*L.*). Red-spotted Bluethroat.

20. Erythacus rubecula (*L.*). Redbreast.

Resident, and common in the east, though nowhere, strictly speaking, an abundant species. One day in December 1882 we observed a number of robins in the Dunrobin grounds; there were at least ten in as many square yards. Has increased around Loch Inver in the west, since the plantations have got up, and is not uncommon there. Common at Tongue.

A common and resident species. A curious fact is related by Mr. Osborne, when a robin in full song died, apparently from the effects of fright, on a gun being fired near, not at, the bird (O. MSS., 1868).

[1] It is amusing to find some English ornithologists, Seebohm amongst others, recording the Redstart as "rare in Scotland."

Common, yet not to be called abundant; rarer in the north; seen at Dunnet, Barrogill, etc., and more frequently south of Wick, beginning at Hempriggs.

21. Daulias luscinia (*L.*). Nightingale.

22. Sylvia rufa (*Bodd.*). Whitethroat.

Summer visitant; occurring in limited numbers through the whole of the east and south-east districts. Selby considered it rare in 1834, when it was observed once at Tongue and once at Bonar. In 1865 described by Mr. A. G. More as nesting "only occasionally in Ross, Sutherland, and Caithness" (*Ibis*, 1865, p. 25). But since then found to breed regularly near Tain, and seen by ourselves near Dornoch. Undoubtedly extending its northward distribution in Scotland. Reported common at Tongue.

We heard the whitethroat commonly close to Lairg in 1885.

We do not appear at present to have any record of the whitethroat in Caithness, except Mr. A. G. More's, given above.

23. Sylvia curruca (*L.*). Lesser Whitethroat.

24. Sylvia orphea, *Temm.* Orphean Warbler.

25. Sylvia atricapilla (*L.*). Blackcap Warbler.

Very rare and casual visitant. A specimen obtained by Sheriff Mackenzie at Dornoch, on November 1, 1871, is in the Dunrobin Museum.

First recorded as a Caithness visitant by Mr. Osborne, who observed a male in two successive seasons—1858-59—feeding on the berries of the rowan-tree. A long discussion in the *Field* as to whether the birds he described thus feeding were really blackcaps or not, was ended by Mr. Osborne shooting a pair, male and female, the following season, in the month of October 1860, which were stuffed by the

Messrs. Small of Edinburgh, and sent to the then editor of the *Field* for identification. For three seasons following Mr. Osborne appears to have noted the arrival of these birds (on one occasion—1862—a male remained until November 8), but not afterwards (O. MSS., 1868).

26. **Sylvia salicaria** (*L.*). **Garden Warbler.**

27. **Sylvia nisoria,** *Bechst.* **Barred Warbler.**

28. **Meilzophilus undatus** (*Bodd.*). **Dartford Warbler.**

Sub-family *PHYLLOSCOPINÆ.*

29. **Regulus cristatus,** *Koch.* **Gold-Crest.**

Resident in the south-east, where it breeds in the fir-woods so suitable to it. Large additions to its numbers arrive in the autumn, and these are scattered all through the district, as they do not then adhere so closely to the large woods, but haunt the smaller patches of birch and alder. A wonderful migration of this species occurred in the autumn of 1882, stretching in width of migration-wave from Faröe, south to the English Channel, along our whole eastern seaboard, driven, helpless and exhausted, upon our shores, by strong continuous east and south-east winds. Much scarcer about Tongue since the winter of 1878-79.

A resident species in Caithness, large additions arriving in autumn, which latter appear only to remain a few days during migration. A very great migration of these birds is noticed by Mr. Osborne as having occurred from the 9th to 12th October 1863 (O. MSS., 1868).

Seems always to have been common in Caithness, and is marked so in Shearer and Osborne's List prior to 1862.

Another unusually large migration took place in the autumn of 1882, which had been preceded by an almost correspondingly unusual "rush" in March and April of the

same year (see *Migration Reports,* 1882, Newman, West, Newman and Co., London).[1]

30. **Regulus ignicapillus** (*C. L. Brehm.*). **Fire-crested Wren.**

[A specimen recorded by St. John in the collection of Mr. Bantock, late keeper at Dunrobin, must, in absence of more complete record, be considered as doubtfully admitted.]

31. **Phylloscopus superciliosus** (*Gm.*). **Yellow-browed Warbler.**

32. **Phylloscopus collybita** (*Vieill.*). **Chiff-chaff.**

"The first specimen of this warbler recorded as having occurred in Caithness-shire was shot at Ulbster in July 1861 by Mr. R. Shearer. In the autumn of the following year considerable numbers of the same species visited us for the first time in company with the willow warbler, so that I had frequent opportunities of observing them" (H. Osborne in MSS.).

As yet probably only a passing migrant, and not a breeding species.

33. **Phylloscopus trochilus** (*L.*). **Willow Wren.**

A summer visitant; extremely abundant wherever there is a little birch-wood. A single bush sometimes shelters a pair of willow wrens, but a bit of green, however tiny, seems necessary to their existence. A nest taken near Balnacoil was placed in that of a robin from which the young had previously flown; it was lined with feathers and arched over.

Appears to be a regular visitant to this county, though it has hitherto been overlooked (O. MSS., 1868). Not apparently noticed previous to 1862, but has much increased since then. Mr. Osborne mentions a pair obtained near Pulteneytown on May 1, 1861, and also notices several previous migratory flights in company with chiff-chaffs as occurring in the autumn of 1861.

[1] See also later *Migration Reports*, viz., 1885-86, obtainable from Messrs. Macfarlane and Erskine, St. James's Square, Edinburgh.

Observed by Harvie-Brown at Barrogill, Dunbeath, and Langwell; still rare in the north; common in the south-east. Mr. Reid has seen the species in the town of Wick.

34. Phylloscopus sibilatrix (*Bechst.*). Wood-Wren.

Summer visitant; fairly common in the south-east district. This warbler was first observed by us in the summer of 1875 at Glenrossal, near Rosehall. The following year one was reported as having been heard at Kildonan in May 1876 (*auct.* Lord Clifton, *Zoologist*, 1876, p. 5122). In 1877 we heard many in the Dunrobin grounds, and observed one at Kintradwell also, but this seemingly sudden increase is more likely due to the want of competent observers in previous years than to the absence of the birds themselves. Not known further west than Lairg and Altnaharrow. Of this we feel pretty certain up to date of going to press, but we shall be surprised if it do not become a summer visitant to the suitable woods at Loch Inver; indeed, we think we once saw it there, but only once, in 1881. In 1885 the nest and eggs were taken in Dunrobin Glen by our friend Mr. George Lawson, and were seen by Harvie-Brown in the same season, at Mr. Lawson's house in Golspie.

Not recorded as occurring in Caithness by Mr. Osborne, though it has a place in Shearer and Osborne's List; but as the willow wren is not included in the latter, it is probable that there was a mistake in the species. Harvie-Brown however, identified it at Dunbeath in June 1885.

Sub-family *ACROCEPHALINÆ*.

35. Hypolais icterina (*Vieill.*). Icterine Warbler.

36. Ædon galactodes (*Temm.*). Rufous Warbler.

37. Acrocephalus streperus (*Vieill.*). Reed Warbler.

38. Acrocephalus palustris (*Bechst.*). Marsh Warbler.

39. Acrocephalus arundinaceus (*L.*). Great Reed Warbler.

40. Acrocephalus aquaticus (*Gm.*). Aquatic Warbler.

41. Acrocephalus schœnobænus (*L.*). Sedge Warbler.

A summer visitant; not rare, but very locally distributed both in the east and west of the county. It has been traced to the extreme north of Sutherland by Mr. Selby in the year 1834.

First added to the Caithness list by Mr. Osborne, who found it plentiful in the neighbourhood of Wick, in suitable localities (O. MSS., 1868). But previous to 1862, the reed warbler (*Salicaria arundinacea—sic*) is recorded in Shearer and Osborne's List, evidently in error for the sedge warbler, and is noted as occasional.

Mr. Reid of Wick took a nest of this bird near Stirkoke in 1884. Seen by us not uncommonly in 1885 at Dunbeath, and in Dunbeath Glen.

42. Locustella nævia (*Bodd.*). Grasshopper Warbler.

43. Locustella luscinioides (*Savi*). Savi's Warbler.

Family **ACCENTORIDÆ.**

44. Accentor collaris (*Scop.*). Alpine Accentor.

45. Accentor modularis (*L.*). Hedge-Sparrow.

Resident; common; extending its range wherever plantations are springing up; it has now got up to Badenloch, in the centre of the county, where there are a few trees planted round the shooting-lodge. Occurs also far from wood, as for instance at the back of Ben More, Assynt, by the heather-clad shores of the Gorm lochs, where a pair seen by us evidently had young. Common at Tongue.

An abundant Caithness species, according to Mr. Osborne, well known in both town and country. It leaves the plantations and other wooded districts as autumn draws to a close, and comes nearer to the houses, where a more abundant supply of food is obtainable (O. MSS., 1868).

Common, but less so along the north coast, than on the east coast, south of Wick as observed in 1885.

Family **PANURIDÆ.**

46. Panurus biarmicus (*L.*). Bearded Reedling.

Family **PARIDÆ.**

47. Acredula rosea (*Blyth*). Long-tailed Titmouse.

Resident and common, flocks being observed in winter in all the east coast straths we have visited at that season. Most frequently observed in winter, and apparently more abundant then; this, however, as in the case of the cole tit may be, firstly, because the leaves being then off the trees the birds are more easily seen, and, secondly, that these birds then go in flocks. Sheriff Mackenzie informs us that this bird breeds regularly in the birch-woods about Lairg. It is present also around Tongue in the north, but is reported as having decreased of late years, especially since the winter of 1878-79 (J. Crawford, 1884). Not observed hitherto in the west. Present in 1885 at Bettyhill, in Strathnaver district, and Tongue (S. G. Reid).

Two specimens were obtained by Mr. Reid of Wick in 1882: one near Lybster, and the other shot at Forss, parish of Latheron; the latter preserved by Sergeant Sandison.

48. Acredula caudata (*L.*). Continental Long-tailed Titmouse.

49. Parus major, *L.* Great Titmouse.

Very rare in the east; one specimen in the Dunrobin Museum. Sheriff Mackenzie writes that he has never seen this bird about Dornoch. This species has however certainly been observed by us on one occasion near Loch Inver, in the west. It is as yet absent around Tongue. There are eggs purporting to be of this species in the Dunrobin Museum, but unfortunately there are no notes available regarding

them. If they were taken in a new locality it would have possibly helped our estimation of their distribution to have the date and place recorded.

50. **Parus ater**, *L.* **European Cole Titmouse.**

51. **Parus britannicus**, *Sharpe and Dresser.* **English Cole Titmouse.**

Abundant and resident in the east, receiving apparently large additions in the winter. This tit inhabits all the patches of old birch-wood in the district, and breeds there, in winter, associating with such other birds as the blue and long-tailed tits, and gold crests, besides others of its own species. Commoner in the west than either of the two last-named species. Common at Tongue (*auct.* J. Crawford). In 1878 we found a nest of young cole tits in a crack in a dry hill of peat, on a burnside near Overskaig on Loch Shin. The only trees, for quite a mile around, were a few birch-trees in a hollow on the burnside.

Recorded as rare in Caithness (Osborne), only two specimens having been obtained there subsequent to 1840, and is the only species of tit mentioned as occurring in Caithness by Mr. Osborne. They appeared again in the autumn of 1861 at Barnyards, near Wick, and Mr. J. Sutherland, a few days after, found apparently the same family party of eight or ten birds at Harrow Park. A specimen was shortly after obtained by Sergeant Sandison at the same place, and the latter gentleman also got another from a neighbouring locality. Thus the species came to be added to the Caithness Fauna, Mr. Osborne having been indebted to Mr. C. Peach for bringing them under his notice. This species was again seen in 1862 (O. MSS., 1868).

52. **Parus palustris**, *L.* **Marsh Titmouse.**

[*Obs.*—The marsh tit is included as "not uncommon at Syre in the autumn of 1885 along with the blue tit" (*auct.*

Savile G. Reid). This is by far the most northern locality we have record of up to date. We have no other authority for its occurrence.]

53. Parus cæruleus, *L.* Blue Tit.

Resident, occurring in all suitable localities along the south-east where there is wood; more frequently observed in winter. Rare in the west, and very local. Some years ago we described it as "common in the west, but local," but we now believe this to have been an error; otherwise there has been a change of circumstances. Our subsequent notes do not bear out the previously published statement.

Mr. Reid records two or three specimens obtained near Wick and elsewhere in the county, and mentions their having been preserved.

54. Lophophanes cristatus (*L.*). Crested Titmouse.

Family **SITTIDÆ.**

55. Sitta cæsia, *Wolf.* Common Nuthatch.

Family **CERTHIDÆ.**

56. Certhia familiaris, *L.* Tree Creeper.

Resident, and common in the east, wherever there is sufficient wood, and we have obtained its nest there. Generally solitary, but Mr. Houstoun tells us that in the beginning of March 1882 he saw some dozens of these birds together, five of them on one tree. Unknown in the west; common at Rosehall, and present at Lairg and at Tongue.

A not very abundant species, resident in suitable localities, and has been observed by Mr. Osborne in the few small plantations that occur in the neighbourhood of Wick (O. MSS., 1868). It is only marked as occasional in S. and O.'s List prior to 1862; Mr. W. Reid has obtained it from Dunbeath in 1880.

Family **TROGLODYTIDÆ.**

57. Troglodytes parvulus, *Koch.* Common Wren.

Resident, and common everywhere in the east; frequenting the very wildest places on the hillsides, especially the burn-courses overhung with long heather, even in the severest winter. Perhaps not quite so abundant in the west, still common in almost every suitable locality, singing loudly above the roar of the Kirkaig Falls, and sitting there almost within reach of the spray, and is decidedly an increasing species in the west (1885).

In Caithness, in 1885, we were not struck with the abundance of this usually very common species; but in our travel we certainly spent more time on the coast-lines than inland: therefore, no doubt, we did not meet with the wren till we arrived at Dunbeath.

57b. Troglodytes "hirtensis," *Seebohm.* St. Kilda Wren.

Family **MOTACILLIDÆ.**

58. Motacilla alba, *L.* White Wagtail.

59. Motacilla lugubris, *Temm.* Pied Wagtail.

Summer visitant; abundant everywhere in the county, rarely remaining the winter through; arrives very early in spring.

An abundant species in the county during the summer, where it goes by the name of "Willie Wagtail," a few only remaining through the winter, nor do these seem to be affected by cold, as a good many were observed by Mr. Osborne in the terribly severe and protracted storm of 1867 (O. MSS., 1868).

In 1885 we found this species very generally distributed, but not abundant, being commoner on the east coast than on the north.

60. Motacilla melanope, *Pall.* Grey Wagtail.

A summer visitant; fairly numerous in the eastern district. Returns with great regularity to the same nesting-places year after year. After the severe winter of 1878-79 two nesting-places we knew of in the latter district were, however, unfrequented. Occurs in winter occasionally about Bonar; we received a specimen from there in the flesh in 1869. Local in the west, visiting regularly the same spots every year. Not very abundant.

Not a very common species, according to Mr. Osborne, who has only obtained one nest near Wick; more plentiful in the autumn than at other times.

Marked "occasional" in the 1862 list.

Two pairs seen at Berriedale in 1885 by Harvie-Brown, but none observed northward through the county.

61. Motacilla flava, *L.* Blue-headed Wagtail.

62. Motacilla rayii, *Bon.* Ray's Wagtail.

[*Obs.*—This species is included in Mr. A. G. More's sub-province 35, but with a mark of interrogation. He says, "This bird has been seen as far north as Sutherland by Mr. St. John and Sir W. Jardine," etc., but we have never met with it nor heard of it during some eighteen years' experience of the county.]

It is rarely found in Caithness (O. MSS.).

63. Anthus pratensis, *L.* Meadow Pipit.

Resident; partially migratory; abundant everywhere in summer, much scarcer in winter. Rarely occurs above the heather line, at least in our experience, though Selby speaks of it as met with "on the summits of the highest hills." This species, along with the rock pipit, was extremely abundant around Durness, and on the peninsula of Far-out Head, where we observed them in 1882. Though not

usually very common near the coast, in 1885 we found it quite so at Findlemore on Loch Laxford, and between that and Tarbat.

Abundant and resident. Local name "Teitlan" (O. MSS.).

In 1885 found abundantly inland, rarer near the coast. A few about the peninsula of Dunnet Head; rarer on or near the north coast than in the east of the county.

64. Anthus trivialis (*L.*). Tree Pipit.

Summer visitant; rare and local. First recorded as a breeding species in 1875, when two pairs were seen and a nest taken at Glenrossal near Rosehall. At the latter place a single specimen had been observed before. Casual visitant in the west, the only instance of its occurrence we can recall from personal observation being that of a solitary example at Inchnadamph previous to 1875. Reported as occasional at Tongue.

Only one or two specimens have been obtained in Caithness. One, a male, was procured in a wooded park in Pulteneytown on the 4th May (O. MSS., 1868). Mr. Reid has since met with it.

65. Anthus campestris (*L.*). Tawny Pipit.

66. Anthus ricardi, *Viell.* Richard's Pipit.

67. Anthus spipoletta (*L.*). Water Pipit.

68. Anthus obscurus (*Lath.*). Rock Pipit.

Resident; abundant; breeding all along the coast, excepting that part from about Port Gower to the Dornoch Firth, where the locality is not suitable, but it is found there in the winter. Perhaps most numerous along the north coast; in great numbers on the peninsula forming Far-out Head, near Durness. Omnipresent on the coast-lines of the west, and on the islands, where it often breeds on the flat ground under the shelter of a rock or stone, or ledge of turf, like

the meadow pipit, though usually choosing the safer positions amongst the sea-pinks of the precipices.

The Rock Teitlan is very abundant, and resident all along the Caithness coasts (O. MSS., 1868).

In 1885 we found it very common all along the coast everywhere.

Family **PYCNONOTIDÆ.**

69. Pycnonotus capensis (*L.*). Gold-vented Thrush.

Family **ORIOLIDÆ.**

70. Oriolus galbula, *L.* Golden Oriole.

Family **LANIIDÆ.**

71. Lanius excubitor, *L.* Great Grey Shrike.

Irregular autumn visitant; more common perhaps than is supposed. Observed as long ago as 1845, a specimen in the Museum being dated that year, and is probably the same which is referred to in the New Statistical Account of the County (1845), p. 28. We have ourselves observed one or two specimens on the south-east coast, and there is in our collection at Dunipace a male bird shot near Tongue, and sent to us in the flesh by Mr. Crawford, on 7th December 1875.

This bird has been frequently obtained in Caithness, and almost always in the winter. The last Mr. Osborne heard of was taken in Wick marketplace, November 1865 (O. MSS., 1868). Previous to 1862 one was obtained by Mr. R. I. Shearer himself, at which time it was the only recorded instance of its occurrence (S. and O. 1862).

Mr. Reid observed two at Wick at the same time in 1870, and Mr. W. H. Doeg received one young male in the flesh, killed at Ackergill, Wick, 13th October 1881.

72. Lanius minor, *Gmel.* Lesser Grey Shrike.

73. Lanius collurio, *L.* Red-backed Shrike.

[One is recorded as being in the Dunrobin Museum, but there is no history attached to it.]

[A young bird of this species is in the Duke of Portland's collection at Welbeck Abbey, but there is no precise date or locality given beyond the general statement that "all the birds in the collection were shot on the Duke's property in Caithness" (Welbeck).

A specimen of this bird is mentioned by the late Dr. Sinclair of Wick as having been killed in the county.]

74. Lanius auriculatus, *Müll.* Woodchat Shrike.

Family **AMPELIDÆ.**

75. Ampelis garrulus, *L.* Waxwing.

Very rare and casual visitant. One specimen known to us came into the possession of the late Mr. Dunbar of Brawl; it was shot in a garden near Balblair, Invershin, date unknown. An adult male shot by Sheriff Mackenzie at Dornoch on the 3d December 1872. There had been severe gales three weeks before.

Marked occasional in S. and O. (1862), and "generally found dead." The first example obtained in Caithness was shot many years ago at Rosebank. On the 12th Nov. 1863 another made its appearance within the same grounds, as observed by Mr. Osborne, and remained three days. In the winter of 1866-67 two haunted a corner of Mrs. Coghill's garden in Pulteneytown for some days (O. MSS., 1868).

Family **MUSCICAPIDÆ.**

76. Muscicapa grisola, *L.* Spotted Flycatcher.

Summer visitant; commonest in the south-east; more rare in the north and centre, but has been found nesting all the way, in suitable places between Dornoch and Tongue, by

Sheriff Mackenzie. In 1878 we met with it for the first time at Inchnadamph, where a pair took up their quarters. We, also in the same year, saw one bird on the Loch Inver road, near Assynt shooting-lodge. It does not seem to progress where birch only grows, at least such has been our experience hitherto.

Mr. Osborne considered this one of the rarest of Caithness visitants up to 1867. A few years before this, however, considerable numbers appeared one autumn near his house, and this seems to have been the first time they were noted as occurring in the county. The season following an equal number arrived about the same time. A pair, male and female, were shot at Harrow Park in May 1867 (O. MSS., 1868). It is however previously noted by S. and O., 1862 and 1861, as seen about the end of May, and birds of the year frequently seen in a garden in Wick.

In 1885 we observed it commonly at Hempriggs House, and also around Dunbeath, and southward in suitable localities.

77. Muscicapa atricapilla, *L.* Pied Flycatcher.

An irregular spring visitant. The first known to have occurred in the county was obtained by ourselves in a very wild burn, some eight or nine miles from Brora, on the 27th of May 1872. After that none were observed again until the year 1881, when a pair came into Mr. Houston's back garden at Kintradwell, and took up their quarters there for some days, feeding about the window that looks into the garden; they eventually disappeared, though never disturbed, and Mr. Houston had good hopes of their breeding there. About the same time—May 2—two of these birds were picked up dead at the Meikle Ferry,[1] near Tain in Ross-shire, and on the 4th another was found dead, and brought

[1] The Meikle Ferry is on the high-road between Inverness and Caithness, and connects Sutherland and Ross-shire.

along with the preceding two to Sheriff Mackenzie. The latter is in our collection at Dunipace.

A pair of these birds were obtained in Mr. Davidson's park, near the south toll-bar, Pulteneytown, in May 1867. This species is also mentioned in Dr. Sinclair's List (O. MSS., 1868).

Harvie-Brown had two specimens—male and female—sent to him in the flesh from the Pentland Skerries, which specimens now belong to the light-keepers there. They were chased down by Mr. John Gilmour and two assistant light-keepers, and at last captured on May 1st, 1885. At the time the wind was south-east, strong, with a thick haze. There can be little doubt this species occurs frequently, if not regularly, on migration at this station, as previous entries in the lighthouse schedules of "Titmice," were all relating to this species, as was explained by the men on the occasion of Harvie-Brown's visit there in July of the same year.

78. Muscicapa parva, *Bechst.* Red-breasted Flycatcher.

Section 2. OSCINES LATIROSTRES.

Family **HIRUNDINIDÆ.**

79. Hirundo rustica, *L.* Swallow.

Summer visitant, but local; breeds here and there along the south-east coast, but not seen far inland. Probably more common about Dornoch than any other part of the county. Not common anywhere in the west, and decreasing. Have always been very late of arrival in the west. They arrive at Tongue about 28th April, which would be a very early date in the west. They disappeared from Tongue in 1867 and 1868, but reappeared in 1869; but it only very rarely breeds there. Apparently absent from Altnaharrow in June 1881. Recorded as absent from Inchnadamph in

summer of 1885, although the next species was commoner than in most seasons.

As a Caithness bird, the swallow is common, and known all over the county. Has been known to prolong its stay even as far north as Caithness until October or even November (O. MSS., 1868).

According to our 1885 observations—imperfect no doubt as those were—the chimney swallow was rare on the north coast, commonest or most frequently observed near Wick. Is rarer than formerly, but is still common.

80. Chelidon urbica (*L.*). House Martin.

A summer visitant; local and scarce, and occurs mostly in the south-east. One colony used to nest in a quarry or sandpit near the railway bridge over the Golspie Burn. We have seen a pair of these birds at Balnacoil, Strath Brora, flying about and resting on the house in July, but apparently the place was not suitable for breeding purposes, as after a day or two they departed. Local and rare in the west, and decreasing annually for some years prior to 1877. Used to breed in the limestone rocks of Stronchrubie, where we have only, however, in all our experience, found old nests, so they must have almost disappeared since Selby's record in 1834. St. John found them in caves close to Durness, but we saw nothing of them in 1881. Common at Tongue for a short time annually, but it seems doubtful if they breed there. Common at Inchnadamph in the summer of 1885 (J. Young, *in lit.*), as has been observed by us at many other localities in Scotland.

"A much more abundant species on the east coast than the preceding, breeding in great numbers all round the high cliffs from Noss southwards, and there are always two or three colonies in the short space between the old castle at the latter place and the termination of the cliffs in the direction of Ackergill. The neighbourhood of the 'Old

Man' of Wick is also frequented by great numbers of this species" (H. Osborne in MS.).

In 1885 Harvie-Brown did not meet with a single example of this bird, either on the coast or inland, till he arrived at Dunbeath, where he found a few, and again more plentifully at Berriedale. 1885 is a year which seems to have been unusually favourable to martins in other parts of Scotland.

81. **Cotile riparia** (*L.*). **Sand-Martin.**

A summer visitant; common, and generally distributed in the east, where suitable breeding localities can be found. Does not always breed in large colonies; in some places there are not more than one or two pairs. These remarks apply also to the west, but they are probably still scarcer there, a few pairs only frequenting scattered localities. Observed in some numbers at Loch Slam and on the Borgie river, near Tongue. There is a small colony at Lairg.

"It can hardly be described as a rare Caithness species, although, from its habit of frequenting only the neighbourhood of steep sandy banks, generally near water, it is much seldomer seen than either of the two preceding species" (H. Osborne in MS.).

Not observed in 1885 anywhere abundantly, yet must be considered as a common species, and perhaps most seen near Dunbeath.

82. **Progne purpurea** (*L.*). **Purple-Martin.**

Section 3. OSCINES CONIROSTRES.

Family **FRINGILLIDÆ.**

Sub-family *FRINGILLINÆ.*

83. **Carduelis elegans,** *Stephens.* **Goldfinch.**

Must be extremely rare; we ourselves have never seen this bird. Mr. Mackenzie informs us that it is known to breed

at Dornoch, and that birds are occasionally seen in his neighbourhood. St. John remarks upon it as being very rare even when he was in the county, 1848, but it was common then in comparison with the present time. "A pair were seen in a birch-wood on the banks of Loch Laoghal by Mr. James Wilson—one of Mr. Selby's party—in 1834." It has not been observed up to date at Tongue.

"As a Caithness species, although by no means common, and but little known in its wild state, it yet can hardly be described as rare. Few seasons pass, indeed, without two or three of these beautiful and prized birds being observed in this neighbourhood. I have known of several instances of their being caught with a decoy bird, and even in the gins set for linnets, etc., in farmyards and near corn-stacks. Local bird-fanciers have a tradition of the nest of the goldfinch being found in Wick churchyard, and I believe one or two authenticated instances of its breeding in this neighbourhood are on record" (H. Osborne in MS.).

Marked as occasional in S. and O.'s List (1862).

Considered by us as one of the very rarest and most local of British—not to say Caithness—birds.

84. Carduelis spinus (*L.*). Siskin.

Resident; breeding about Dunrobin regularly, and probably does so through all the wooded districts of the south-east; the nest, however, is extremely difficult to find, being placed on a pine-tree, and generally at the end of a branch, concealed from beneath by the cup formed by the uprising of the terminal fronds. Our informant says that they breed at two different times of the year,—first in April and May, and again in June and July, he having taken the young in August; he also says the earlier breeders are smaller and more lively and cheerful than the later ones. Mr. T. Mackenzie reared a young one taken on the 21st May 1875, and it proved an interesting pet. Mr. E. R. Alston observed

several birds at Rosehall when he was passing south in June 1877. Wolley received eggs from Dunrobin as early as 1851 (Wolley's *E.-B.*, p. 539).

"The siskin is one of our occasional visitants, but usually only in small parties, and most frequently they are seen either singly or in pairs. The nest has been found once or twice in the neighbourhood of Wick, and the species has been known also to breed in the plantations at Stirkoke" (H. Osborne in MS.)

Since then has been observed by Mr. Reid.

85. Serinus hortulanus, *Koch.* Serin Finch.

86. Ligurinus chloris (*L.*). Greenfinch.

Resident; not numerous; probably confined to the south-east of the county. Rare or absent in the west, and rare about Tongue. Common at Lairg in June 1885.

A pair caught in winter by J. Munro, and caged, were let away by him in summer, and are now (1886) breeding in the garden at Inchnadamph. We heard also a greenfinch in 1886 near to Tumore, on the side of Loch Assynt. This may have been a separate arrival, or one of the same birds, or one of their young.—July 15, 1886.

Caithness name "Green Lintie." Abundant and resident, building its nest in one instance in a garden in the town of Wick (O. MSS.), and recorded as common as far back as we have data.

Frequently seen in 1885, and apparently more abundant on the north coast than on the east. Seen all the way round from Thurso to Dunbeath in suitably cultivated districts, and most abundant where hedgerows (which are scarce in Caithness), trees, or furze occurred.

87. Coccothraustes vulgaris, *Pall.* Hawfinch.

Not recorded from Sutherland.

["It has been traced . . . thence to Caithness" (Gray, *Birds, West of Scotland*, p. 144), apparently quoting Mr. Wilson's authority as having included it in the list of birds seen by him in the collection of Dr. Sinclair, but if it occurred, it can only be admitted as a very uncommon straggler there.]

88. **Passer domesticus** (*L.*). **House-Sparrow.**

Resident, abundant along the east coast; local further inland. At Gordonbush, Strath Brora, we never remember to have seen a sparrow; but at Balnacoil in 1879—and that year only—a pair bred there. Has once occurred at Badenloch. In the west appeared at Inchnadamph for the first time in 1882, when a pair arrived in spring after a gale of wind, and remained and bred, and they again were present in 1884. Common at Altnaharrow. Present, but not abundant, at Durness, also at Scourie, and again at Tongue, Syre (S. G. Reid's Journal, 1886), and elsewhere. In 1882 Mr. J. C. M. Wallis remarks, "House-sparrow only at Lairg and Inchnadamph"—*i.e.* among the places he visited—and at Scourie.

Abundant, and widely spread throughout the county of Caithness (O. MSS., 1868), and the same remark applies in 1885, both in the towns and country homesteads, though not penetrating to far outlying habitations, such as lighthouses, where the food-supply is not so considerable. The distribution of this species seems to be almost entirely dependent upon the areas under cultivation; whereas the peculiar sporadic occurrence of the next-named species seems to indicate that simpler fare is suitable for them.

Note.—In Cambridgeshire, where both species are common, each species distinctly deserves its specific English name—"House" and "Tree"; but in the Highlands of Scotland, where the house-sparrow is absent, there the tree-sparrow is more deserving of its Latin specific name

montanus, and in Faroe the tree-sparrow is really more deserving of the name *domesticus*, or "house."

89. **Passer montanus (*L.*). Tree-Sparrow.**

Local; probably resident. First described as a Sutherland bird from Dornoch, by Sheriff Mackenzie, where he himself observed the birds in 1872. On March 28, 1872, a flock of a dozen were observed in the neighbourhood of Dornoch, and between then and August several nests of eggs were obtained, one of which sets of eggs, thanks to Mr. Mackenzie, is now in our collection at Dunipace. First observed near Helmsdale in August 1880, again in September of the same year, and many subsequent times, such as in June 1881, January 1883, and December of the same year; again in March 1884. Their nest has not been found as yet at Helmsdale, but there is little doubt that they breed there. We observed it at Clachtoll in 1883. In 1882 about six pairs were found breeding at Rhiconich, one breeding under the eaves of the inn, the rest under the bridge, by Mr. J. C. M. Wallis, and no house-sparrows, but both species were found at Scourie. Mr. Wallis was on the west coast in May, and it is curious to find that in 1883 Harvie-Brown spent a restful hour reading under the said bridge on June 23d, 1883, but saw not one sparrow anywhere about Rhiconich.

In 1885 Harvie-Brown found two pairs breeding under the gable ends of a slated house at a locality on Loch Laxford, and at least another pair within a mile's distance. One cock bird was shot with a little collecting gun on June 15th, and the nest was found. The first locality consisted of only one slated house, and several huts. The nest was a large collection of dried grasses and bits of heather, and quantities of domestic fowls' feathers. There were no other sparrows there.

Sheriff Mackenzie also adds two more localities—one on the west of Edderachyllis, and one on Loch Shin, as observed

by himself in 1884. It has therefore a decidedly increasing range.

The only record is that of one of this species in Caithness discovered by Mr. Osborne, who found one among a lot of house-sparrows that had been shot for the purpose of feeding a tame falcon (O. MSS.). The specimen is now in the University Museum, Edinburgh.

90. Fringilla cœlebs, *L.* Chaffinch.

Resident, and abundant, breeding through the eastern district wherever there is sufficient wood; in the autumn and winter these birds draw down to the more cultivated parts of the county, and their numbers appear to be increased by the addition of migrants. The species has spread rapidly and increased in the west of the county. Formerly we only knew of one pair at Inchnadamph, which bred there for the first time about 1877. Now they are common, but a slight check was put on their increase by the severe winters. Also observed at Altnaharrow and Tongue in 1881. Observed feeding greedily in company with bullfinches and greenfinches on the seeds of elm-trees at Lairg, in June 1885.

A very numerous species, and had increased much during Mr. Osborne's recollection, small parties only being found before, where now there are immense flocks (O. MSS., 1868).

91. Fringilla montifringilla, *L.* Brambling.

Winter visitant of rare occurrence. One sent to Inverness for preservation to Mr. Macleay. Of this bird I have received the following note: "M'Intyre (the Balnacoil keeper) killed a brambling two years ago in the autumn, at Aschoil (near Balnacoil). There were two of them, cock and hen, but the latter was destroyed by the shot. They

were in company with a lot of chaffinches (?), M'Intyre said. He had never seen the same kind of bird before, nor has he since" (G. R. Lawson, *in lit.*). There is a brambling in the Dunrobin Museum labelled "Tawny Bunting, Clyne, March 1846," along with two tawny buntings (*vera*), and probably shot along with the latter. These came originally from the old collection at the Dunrobin Kennels. "Tawny Bunting" is another name for Snow-Bunting in the winter plumage.

Some winters the brambling is numerous—notably in the early winter of 1860, when immense flocks visited the county, but it has not as yet been noted as a regular winter visitant (O. MSS., 1868).[1] The year 1860-61 was famous as a brambling year all over Scotland. Thousands were seen daily for weeks around Edinburgh. Shearer had not observed it at all previous to 1860.

92. Linota cannabina (*L.*). Linnet.

Resident, and common on the east coast, especially from Port Gower to the Mound, where there are great quantities of whin bushes suitable for breeding sites. Their place in the straths is taken by the lesser redpoll. Not common in the west: during our experience we have shot some half-dozen specimens. Occurs, perhaps regularly, at Inchnadamph. Seen there, certainly, previous to 1877, and again in that year, but not observed since then. Reported common at Tongue; breeds also at Balnacoil.

In Caithness it receives the names of "*Rose or Whin Lintie*," "*Sparrow-neb Lintie*," and is abundant and resident, breed-

[1] It is curious to find how completely "out of the track of migration" of a large number of birds this county appears to be. We are glad to observe that Mr. Osborne notes the abundance of this species in 1860, as we have active recollections, specimens, and notes, regarding that unusual visitation in other parts of Scotland (*e.g.* district of "Forth," etc.). The early advent of the snow-bunting in the same season probably points to similar climatic causes.

ing all through the county in suitable localities (O. MSS., 1868).

In 1885 very abundant indeed; both in pairs and in flocks of old and young in June 1885, all round the cultivated belt of land on the north and east coasts.

93. Linota linaria (*L.*). Mealy Redpoll.

(Though we have no positive records, no doubt this species occurs in passage at times.)

94. Linota rufescens (*Vieill.*). Lesser Redpoll.

Breeds rather commonly in some of the birch and alder woods on the east coast. Fresh eggs may be taken from the middle of May to the middle of June. Breeds almost in a colony near Lairg. Not hitherto observed in the west of the county, and unrecorded in the Tongue district, or elsewhere in the north.

Mr. Osborne records this species as only an occasional visitant in Caithness, but says that considerable parties have been seen in some years, and at different seasons, and that their numbers are rapidly on the increase (O. MSS., 1868). We have it also recorded later by Mr. Reid.

95. Linota hornemanni, *Holb.* Greenland Redpoll.

96. Linota flavirostris (*L.*). Twite.

Not known to us as a breeding species in the south-east, though it is more than probable that it occurs largely in winter with the flocks of common linnets, as we have seen it in the districts about Badenloch in the autumn, haunting the gardens and "kailyards." As far back as 1849 the twite was known to breed at Inchnadamph, as in that year Mr. Wolley took a nest of three eggs, and shot the birds, on the little river Trailigill. They continued to breed there,

still very sparingly, until 1882, when their numbers began to increase, and in the early part of May 1884 a flock of at least forty individuals was seen by Mr. J. Young. Since then they have rapidly increased, and are now spread, in the breeding season, all along the edges of the limestone cliffs between Inchnadamph and the Skiag Burn. Comparatively common also at Drumbeg, on the north coast of Stoir, where we first met with them in 1883. Observed also at Tarbat, opposite Handa, on June 15th, 1885. Rare on the north coast between Cape Wrath and Whiten Head; but Lord Clifton, in a letter to Harvie-Brown, records it as occurring at Durness.

The "*Hill Lintie*" or "*Yellow-neb Lintie*" of Caithness is abundant and resident, spreading out in summer to breed wherever there is a sufficiency of long rank heather to place its nest in. "Great numbers of this and the preceding species are caught during snowstorms; and, although there is no marked line of demarcation between them—twites being obtained in the least cultivated districts, and common linnets on the borders of moorlands—the latter in a storm assemble most abundantly about the corn-stacks of large farms, whilst the twites monopolise the scanty ricks of the cottars situated in hilly districts—not more than two or three brown linnets occurring among flocks of hundreds of mountain linnets" (H. Osborne in MS.).

In 1885 a few pairs were observed along the coast and cliff-edge, principally on the broken seapink-covered tops of the Dunnet peninsula. All observed were still in pairs in the end of June.

97. Carpodacus erythrinus (*Pall.*). Scarlet Grosbeak.

98. Pyrrhula europea, *Vieill.* Bullfinch.

Resident, not very common, most frequently seen in the winter; more abundant probably in the east than the west

during the summer, in which latter district it was first seen by us in July 1883, in the plantations around Loch Inver, on which occasion we saw a good many. Mr. Crawford never saw any at Tongue except during one year, about twenty years ago, say 1864. Common at Lairg in 1885, and exceedingly abundant in the valley of the Cassley in the winter of the same year, and had become very common at Loch Inver by 1886.[1]

Almost unknown in the north and east of Caithness, Mr. Osborne only being aware of two well-authenticated instances of its occurrence (O. MSS., 1868). Not included in S. and O.'s List (1862), but mentioned by Mr. Reid as having been identified by him.

In 1885 observed only in Dunbeath Glen, where it was not rare; though, no doubt, it occurs also to the southward at Berriedale and Langwell, though not perhaps very abundantly.

99. Pinicola enucleator (*L.*). Pine Grosbeak.

100. Loxia pityopsittacus, *Bechst.* Parrot Crossbill.

Two examples of this species, male and female, are recorded by Mr. Osborne as occurring in Caithness. The male alighted on a fishing-boat while some distance at sea off the coast, and having been caught alive, was presented by the fishermen to Mr. George Auld, druggist, Wick, who kept it for some considerable time. The female was picked up dead near a plantation at Lyth, and came into Mr. Osborne's possession through Mr. Mackie of Wick (O. MSS., 1868), and this bird was exhibited at a meeting of the Royal Physical Society of Edinburgh on 22d January 1862. The

[1] In all the many years of our experience of Lairg we do not remember seeing anything like so many there as we met with feeding greedily on the seeds of the elm-trees, and Buckley also remarked upon their unusual numbers at Glenrossal in the autumn.

species has a place in Shearer and Osborne's List, 1862. We ourselves have no great faith in the specific distinction of the parrot crossbill.

101. Loxia curvirostra, *L.* Crossbill.

Resident; breeding in the large fir-woods in the south-east of the county; in some years they are more abundant than in others, as was the case in the year 1881. As early as 1849 St. John speaks of the crossbill as becoming numerous. At Rosehall they were only common for a short time about fifty years ago; after that they entirely disappeared, as we are informed by Mr. Macleay, who was a lad at the time, and saw them then.

Obs.—Specimens sent us, male and female, shot near Tain, on 17th January 1886, as specimens of *Loxia pityopsittacus* cannot be referred to any other species than the last, though they have certainly large stout bills and the characteristics of the so-called parrot crossbill. These birds, sent by Sheriff Mackenzie, are now in our collection at Dunipace.

A casual visitor to the county, most frequently arriving about the latter end of August or the beginning of September, when the berries of the mountain ash are ripe (O. MSS., 1868).

102. Loxia leucoptera, *Gmel.* European White-winged Crossbill.

[*Obs.*—In a sale catalogue of a collection of British birds on 12th, 13th, and 14th May, at Milligan Hall, Taunton, Somerset, by Messrs. Wotton and Co., Taunton, 1874, which catalogue is in our library, occurs the item: Lot 263 (2d day's sale), "A pair of European white-winged crossbills (from the collection of Dr. Seeley, Sutherlandshire)," p. 15. Part of this collection only was sold, and the rest withheld

by Mr. Byne, the proprietor. The collection was afterwards purchased by a Mr. Marsh Dunn of Teignmouth. Mr. Marsh Dunn has since died, and he left the collection along with his own as an heirloom.

103. Loxia bifasciata (*C. L. Brehm*). Two-barred Crossbill.

Sub-family *EMBERIZINÆ.*

104. Emberiza melanocephala, *Scop.* Black-headed Bunting.

105. Emberiza miliaria, *L.* Common Bunting.

Resident, and common, being found along the whole of the eastern coast-line wherever there is sufficient cultivation; more abundant, apparently, in the summer than the winter. Observed in the west at Knockan and Elphin, also at Scourie, and first observed at Inchnadamph in 1882. In 1882 we also met with it sparingly at Durness. It is fairly common at Rosehall, and on the districts bordering the Oykel river below Langwell, and the Kyle of Sutherland. On the north coast it is very local; seen at Bettyhill by Mr. S. G. Reid.

Caithness name—"*Thistle Cock*," "*Thistle Cock Layrag.*" Common; few, however, remaining the winter through. Its habit of perching on the top of thistles, etc., gives it its trivial county name. In autumn these birds assemble in large flocks, and are then very fat and in good condition for the table (O. MSS., 1868).

Exceedingly common all over the cultivated areas, but appeared to be more abundant on the east coast than on the north coast. Where the common bunting appeared to be most common, larks were scarcer, and *vice versa.* (See Lark.)

106. Emberiza citrinella (*L.*). Yellowhammer.

Resident, and common in the east. These birds extend far into the interior of the county to breed, returning to the cultivated ground near the coast in the winter. Common in suitable places in the western districts, even close to the sea. Had apparently increased in numbers at Inchnadamph by 1877, and by 1880 was more abundant around Lairg and the improved lands near Loch Shin. Seen at Altnaharrow in 1881 not uncommonly.

Abundant and resident. Mr. Osborne mentions an instance of a male yellowhammer feeding a young sparrow in his garden in Wick in 1866,—the more curious as it was the first time he had seen or heard of the bird in the precincts of the town (O. MSS., 1868).

Observed commonly in 1885 all along the coast and cultivated portions, yet not an abundant species. Particularly affects whin-rows and hedges, being a natural adaptation of its colour to surroundings. We have often noticed this elsewhere; and where the whin-flower is brightest and most abundant, there the yellowhammer's breast is brighter and purer yellow.

107. Emberiza cirlus, *L.* Cirl Bunting.

108. Emberiza hortulana, *L.* Ortolan Bunting.

[The only specimen known to have occurred in the county is the one in Dr. Sinclair's List, and is noted as seen by Dr. Wilson in 1842.][1]

[1] We see nothing against the possibility of an occasional occurrence of this species even so far north, if we view these matters in the light of modern experiences; but we must adhere to the rule which we have laid down in our Introduction, regarding unsupported evidence afforded by Dr. Sinclair's List. Had Dr. Sinclair kept a catalogue, or even labelled his specimens, this necessary doubt would have been dispelled. It is only just to remark that Dr. Wilson includes this species as having been seen by him in the collection in 1842 (*op. cit.* p. 179).



SNOW BUNTING

PLECTROPHANES NIVALIS *(Linn)*

Juv

109. Emberiza rustica, *Pall.* Rustic Bunting.

110. Emberiza pusilla, *Pall.* Little Bunting.

111. Emberiza schœniclus, *L.* Reed Bunting.

Resident, not common, generally distributed in the eastern districts, and much rarer in winter; and the same remarks apply in the west. Is to be found even in wild moorland districts; and thus Mr. J. Stirling reports it at Gorm Lochs at the northern base of Ben More, and it is also present at Badenloch in the east.

In Caithness this species is well known, and generally distributed through the county, a pair or two being found in many suitable localities (O. MSS., 1868).

Mr. Reid finds it quite common, breeding around Wick, and took eggs at Lybster. Owing to our keeping close to the coast-line in 1885, we did not meet with it at all.

112. Plectrophanes lapponicus (*L.*). Lapland Bunting.

["Two specimens of this bunting have been obtained in Caithness; the second, if I remember rightly, at Thrumster" (H. Osborne in MS.). Shearer admits it in his list with the sole remark "found twice."]

113. Plectrophanes nivalis (*L.*). Snow-bunting.

Up to the summer of 1885 this interesting species had always been looked upon as a common winter visitant, appearing in the low grounds only in severe weather; and as a summer visitant nothing had ever been seen or heard of it; and during many visits to the tops and corries of the more likely mountains, including that in which the nest was eventually found, we never once came across the species ourselves.

The following extract from Mr. Ben. N. Peach's letter, dated 9th July 1886, relates the actual taking of the young, and establishes the fact of its breeding.[1]

Mr. Peach says: "Yesterday (*i.e.* July 8th) young Gray[2] and I started for Corrie ——[3] and looked up the snow-bunting's nest. What our disappointment was when we found the nest empty, you may easily guess. I noticed, however, some dead crane-flies and beetles in the nest, and just outside were the fresh-made droppings of the young birds. I searched among the stones and found one of the young ones lying dead just underneath the nest, and within six inches of it. This I secured, and placed in the bottle of spirits I had taken with me, and while doing so, the hen bird came flying to within two yards of where we were standing. She had her bill stuffed full of crane-flies ready to feed the young ones with, and after flying to where the nest was she gave a peculiar 'chur'-like sound, and she was immediately answered by the surviving young ones, which had evidently crept out of the nest, and were hiding under the large stone which covered it. We saw her feeding them, and while she was doing so the cock-bird came, and flew about us, but he was much more shy, and never came nearer than from ten to fifteen yards of us. The hen came fearlessly to within two yards of us, and had we been nearer the young I have no doubt she would have come still closer. When the hen had once more given over catering, we lifted more of the stones that were lying immediately beneath the nest, and there we found two more dead young ones, both of which we secured.

[1] The first published notice of the fact is contained in a few lines to the *Zoologist* for August 1886, but on the 31st July Mr. Hinxman's account was read at the meeting of the Inverness Field Club by Mr. Wallace.

[2] A. Gray, eldest son of the late Mr. Robert Gray, of Edinburgh, the author of *The Birds of the West of Scotland.*

[3] We have considered it desirable to rechristen the corrie as Coire nan t' sneadhaidh (the Corrie of the Snowbird). *Vide* Plate.

"The height of the nest was about 2800 feet by my aneroid, and as the highest summit of the mountain is over 3200 feet high, I think the height shown by the aneroid was correct.

"I shall secure the nest when the birds have quite forsaken it. I am sure you would have enjoyed seeing the birds flying about and feeding the young. I can only form a faint notion of the pleasure it would have given you. We saw several other cock-birds flying about, and there can be little doubt that there is a little colony of them among the fallen blocks which bestrew the hill."

The following notes, drawn up at our request specially for this fauna by Mr. Hinxman, will also, we are certain, be read with interest; and the suggestive remarks at the conclusion will at all events aid in directing attention to an interesting branch of observation, whether any direct importance in this special instance can be attached or not. We cannot, however, ignore facts of almost annual observation pointing to the process of increase in many species, and the occupation of new nesting sites, after repeated visits of birds merely resting there in previous years.[1]

[1] The following is an instance of this which was given during the discussion by Mr. Wilson, Terpersie, Alford, a keen and observant botanist. He said, "A reason for thinking that such rare birds as the snow-bunting should be nesting on our mountains was that they were becoming more numerous. A variety of gull, *yellow-billed*, rested on the Correen Hills, near Alford. They came season after season, and now they are beginning to nest there, and were appearing north and south of the district, which indicated increase of numbers." Mr. Wilson also instanced plants that were rare or absent in his district some seventeen or eighteen years ago as "now found in abundance," and we ourselves can instance many natural extensions of range of species traceable to an increase of improved areas.

NOTE ON THE NESTING OF THE SNOW-BUNTING (*Plectrophanes nivalis*) IN SUTHERLAND. By LIONEL N. HINXMAN, of the Geological Survey of Scotland.

In the summer of 1885 several parties of the snow-bunting were observed on the higher mountain-tops of the west of Sutherland by Mr. B. N. Peach, who was then engaged in the geological survey of the district. The adult birds were in each instance accompanied by the young of that season, and there was thus every reason to suppose that they had bred in the neighbourhood. During the greater part of the present summer (1886) the hill-tops were generally inaccessible through continual cloud and mist, and though early in the month of June the birds were again observed in the same locality, it was not until the 3d of July that confirmatory proof of the interesting fact of their nesting in Sutherland was obtained.

On that day the ascent of one of the highest ranges in West Sutherland was made by a party of the Geological Survey, and while crossing the rocky ridge forming the summit, the male snow-bunting was seen within a few yards, flitting among the stones. The white bars across the wings were very conspicuous, and the identity of the bird was beyond a doubt.

During the descent of the western face of the mountain, which forms a steep slope covered with loose quartzite "screes," the hen bird passed close by, carrying food in her bill, and the chirp of the young brood was distinctly heard among the rocks near at hand. A few minutes' quiet watching soon revealed the position of the nest, and it was reached without much difficulty.

The elevation given by the aneroid barometer was 2800 feet above sea-level, high up on the eastern face of one of the wildest corries of this desolate range.

The nest was placed some way in amongst the loose angular blocks strewing the slope, and was chiefly composed of dry bents, with a little moss on the outside near the base, and lined with finer bents, a little fur of the mountain hare, and a few ptarmigan



COIRE NAN T' SNEACHDAIDH. (CORRIE OF THE SNOW-BIRD.)

feathers. It measured six inches in greatest diameter, being oval in form, shallow, and somewhat loosely put together.

The young birds, five in number, were apparently rather more than a week old, with the wing-feathers just bursting from the quills.

On July 8th the nest was again visited for the purpose of securing some of the young. It was found to be empty, but after a little search three of the brood were discovered lying dead amongst the stones, having probably climbed out of the nest and been drowned by the heavy rain of the previous few days, while the two survivors could be heard chirping under a large stone near the nest.

Both on this and on the former occasion the fearlessness of the female bird was very remarkable. While the nest was being examined she came repeatedly within a yard of the observers, perching on the stones so close at hand that the crane-flies which she was carrying to her young could be easily distinguished. The nest also contained the elytra of small beetles, so that the young birds would appear to be to a large degree insectivorous. The male bird was also flying near, but never came within less than ten yards.

On the occasion of the first visit several other pairs of buntings were observed about the same corrie, and there is little doubt that a small colony breeds yearly on these wild hill-tops.

Whether they have, however, from time immemorial nested in Sutherland, or whether this may be a recent extension from ancestral breeding-sites further to the north or east, or elsewhere in Scotland, caused by climatic or other changes, is an interesting question, but one which must remain for the present unsolved until further data can be obtained.

From the nature of the country negative evidence is of little value. The birds may have frequented their present nesting-place for a great length of time, and yet have escaped observation. Keepers and shepherds who know the snow-bunting in its winter plumage, and even skilled observers, might pass repeatedly through the corrie without catching a glimpse of the birds, who haunt the

highest part of the screes immediately below the crest of the mountain, where walking is difficult, and even dangerous; while in the humid climate of the west coast there are few days in early summer that find the hill-tops clear of mist above the 2500 feet line.

On the other hand, it is very possible that a climatic change, such as the lowering of the general summer temperature over a particular part of the country, might induce conditions which would cause some of the birds to remain on the higher hill-tops for the breeding season. And for such a change within recent times there is a certain amount of indirect evidence, although satisfactory data, such as would be afforded by a series of reliable meteorological observations, are unfortunately wanting.

Oral tradition, of whatever value it may be, recognises a deterioration in the summer climate of the north-west coast and Outer Hebrides within recent times; as, for example, the undoubted fact that salt-pans, which were formerly largely employed, are now useless from want of sufficient sunshine in ordinary summers.

Botanical evidence is more trustworthy, and observations made on the mountains of West Sutherland point to a tendency in the Alpine plants to creep further down the hill-sides. Strictly Alpine species, such as *Sibbaldia procumbens*, *Saxifraga oppositifolia*, *S. hypnoides*, *Luzula spicata*, and others,[1] are found growing on spots laid bare by the recent decay of the peat, where *sphagnums* and

[1] I am indebted to my friends Messrs. B. N. Peach and A. Gray for the following list of Alpine plants found in, and in the immediate neighbourhood of, the corrie in which the nest was obtained:—

Caltha palustris, γ var. minor.
Cochlearia officinalis, var. alpina.
Draba rupestris.
Cerastium latifolium.
Cherleria sedoides.
Sibbaldia procumbens.
Epilobium alsinifolium.
Saxifraga oppositifolia.
S. hypnoides.
Cornus suecica.
Saussurea alpina.
Gnaphalium supinum.
Loiseleuria procumbens.
Veronica humifusa.
Oxyria reniformis.
Luzula spicata.
Juncus trifidus.
Eriophorum angustifolium, β var. minor.
Lycopodium alpinum.
L. selago.
Selaginella spinulosa.

other peat-forming plants, and, at an earlier period still, the Scotch fir, must have formerly flourished.

It is worthy of remark that the buds of *Saxifraga oppositifolia* form the favourite food of the snow-bunting during the spring in Arctic regions, and an extension of this plant on our mountain-tops may possibly have acted as an inducement to the birds to prolong their stay in these latitudes.

Local name in Caithness—"*Snowfowl*," "*Snawful*."

A very abundant winter visitant, great quantities being killed by the inhabitants for food; said to be much scarcer than formerly, and this fact Mr. Osborne observed for himself independently of the old native statements. Mr. Osborne observed the snow-bunting as early as September 19th, 1860,[1] but their usual time of arrival is between the middle and end of October (O. MSS.); their early arrival in that year is interesting. (See under BRAMBLING.)

Section 4. OSCINES SCUTELLIPLANTARES.

Family **ALAUDIDÆ**.

114. Galerita cristata (*L.*). Crested Lark.

115. Alauda arvensis, *L.* Skylark.

Resident and abundant; breeding commonly along the coast-line and the low meadows in the valleys, more sparingly on the hills through the eastern and central districts, retiring from these latter places coastwards as winter approaches. Abundant on the inland moors above Oykel Bridge and around Loch Clashmore. Generally common around Altna-

[1] 1860-61 was an unusually severe winter all over Scotland. The custom of killing them systematically for food does not hold general over Scotland, but we have found it carried on extensively also in certain high districts of the faunal area of "Moray," of which we may have more to say on another occasion.

gealgach, but further west, in Assynt, more restricted to the cultivated districts. Common at Drumbeg and Point of Stoir, also at Scourie and Altnaharrow. Reported as absent at Inchnadamph in 1885 (J. Young, *in lit.*).

Local name in Caithness—"*Layrag.*"

Very abundant, and plentifully distributed all over the county in the spring and summer, assembling in large flocks in the autumn preparatory to their migration, few remaining through the winter (O. MSS., 1868).

In 1885 found to be very common all round the cultivated belt, but noticed to be commoner where the common bunting was scarcest—viz., commoner on the north than on the east coast, and as regards the two species, *vice versa.*

116. Alauda arborea, *L.* Wood Lark.

117. Calendrella brachydactyla (*Leisl.*). Short-toed Lark.

118. Melanocorypha sibirica (*Gm.*). White-winged Lark.

119. Otocorys alpestris (*L.*). Shore Lark.

Section 5. OSCINES CULTRIROSTRES.

Family **STURNIDÆ.**

120. Agelæus phœniceus (*L.*). Red-winged Starling.

121. Sturnus vulgaris, *L.* Starling.

Resident and increasing; rare previous to the year 1870. This species is at present mostly confined to the coast-line. A pair, however, bred at Balnacoil, ten miles up the Brora Strath, in 1879. Abundant at Scourie, Handa, and the Badcall Islands, where they nest in holes in the peaty turf, and also in holes which we believe to be occupied later in the season by petrels (*Thalassidroma*). Common also at

Durness and Tongue. Absent at Inchnadamph in 1885 (J. Young, *in lit.*).

Included in Dr. Sinclair's List (O. MSS., 1868) as common. Observed to be very abundant in 1885, especially at Brawl Castle; but a considerable mortality seems to have taken place amongst them, probably owing to some unusual abundance, or absence, of particular food-supplies, and the great drought. Very abundant at Hempriggs, near Wick, and all over the county round the shore and cultivated belt.

122. **Pastor roseus** (*L.*). **Rosey Pastor.**

A Rosey Pastor was shot by Mr. T. Trussler, the game-watcher at Carral, in the Dunrobin Forest, near his house, on or about 14th June 1884, and was sent to Mr. Macleay of Inverness, to be preserved for the County Museum.

Mentioned in Sinclair's List; also by Mr. Gray in his "*Birds of the West of Scotland*," though this may have reference to the one in the Sinclair collection.

Another is recorded by Mr. L. Dunbar as follows:—One adult female, shot by Mr. Purves at Castleton on 26th August 1881, was killed amongst a flock of starlings; was preserved by Mr. L. Dunbar, and is now in his possession.

Family **CORVIDÆ.**

123. **Pyrrhocorax graculus** (*L.*). **Red-billed Chough.**

Obs.—No trace of this species has been found that we are aware of since Dunbar and St. John, both referring to the results of the same trip, recorded the occurrence of it on the north coast. As St. John saw the birds himself there can be little doubt of the record; and their disappearance since is only the same process exemplified which is going on in other parts of Scotland as regards this species. A careful survey

of part of the north shore and cliff may, it is possible, still discover a pair or two, but we consider this very unlikely.

124. Nucifraga caryocatactes (*L.*). Nutcracker.

125. Garrulus glandarius (*L.*). Jay.

[Merely recorded in Dr. Sinclair's List.]

126. Pica rustica (*Scopoli*). Magpie.

Resident; extremely scarce now in the eastern district, having of late years been killed down in the game-preserving interests; quite common in 1870. We find that, in 1873, 16 were killed in Dunrobin; in 1874, 26; none again till 1877, when 2 were killed; in 1878, 2; in 1879, 3; and in 1880, 5; or 56 in six years. Unknown in the west and at Tongue among the keepers, except by evil reputation.

Mr. Osborne records that the magpie is found in wooded situations all over the county, and that in the breeding season the few trees planted near occasional farm-houses often form a domiciliary refuge for a pair of these birds. Near Wick they build at Hempriggs, Stirkoke, and at the Mill of Watten, and he has known them to build at a farm-house not far from the latter place (O. MSS., 1868). Not mentioned by Mr. Reid as being known to him; nor did Harvie-Brown see it in 1885, so it is probably extinct there now. We have a record of three killed on the Dunbeath property in 1876 by Mr. Sinclair of Ballantra Cottage.

127. Corvus monedula, *L.* Jackdaw.

Resident, abundant, and everywhere increasing; keeping, however, near to the coast-line, and seldom venturing far inland. The jackdaw is found sparingly at Tongue, but has not as yet appeared in the west of the county.

Resident and abundant, particularly in the breeding season, along the coast from Clyth southwards (O. MSS., 1868), and marked as very common prior to 1862 (Sh. and O. List, 1862).

1885. Vast numbers; has increased greatly and occupies great colonies both on north coast, as far as examined to the westward, viz., at Holborn Ness and Ness Letter; rarer between Dunnet and Mey, but common again at Huna. Not observed on the Pentland Skerries, but is very abundant all down the east coast in all suitable sea-cliffs. The above seems to constitute a considerable extension of range, and it will prove interesting to watch any further steps of advance towards the west.

128. **Corvus corone**, *L.* **Carrion Crow.**

Very rare in the east. One bird paired with a hoodie in 1878, and both old and young were subsequently killed in a wood near Dunrobin. At Tongue a brood is reported to appear, usually after the young rooks have flown, amongst the rooks, and this has taken place annually since 1879 inclusive. Mr. Crawford also speaks of them as breeding in some numbers at Kirkton, near Melvich; and in a letter dated 17th of March 1884, he says: "Carrion crows are, I regret to say, becoming very numerous and destructive to game of every description." Unknown in the west.

An accidental visitant to Caithness (H. O. MSS., 1868).

Mr. Reid mentions it also as having been obtained in the county. We heard nothing more of its presence in 1885.

129. **Corvus cornix**, *L.* **Hooded Crow.**

Resident, and too abundant; no great additions arriving in autumn, as is the case further south along the east coast, the average numbers being almost equally sustained all the year round. The total returns we have received from Assynt, Durness, Reay Forest, and Dunrobin, etc., in nine years, are 3392, which, at 1s. each of premium, represents £169, 12s.

Besides these, there must be, probably, half as many more killed for which no premiums are paid. Appears to be well kept down in the Durness district.

Very common, and resident. Was increasing in numbers in 1867; now, of course, killed down on every possible occasion. According to Mr. Osborne, it was formerly a rarer bird than the raven (O. MSS., 1868). At present in 1885, and during the breeding season, certainly a *rare* bird all along the coast-lines. Though Harvie-Brown walked a large part of the Caithness west and east coast-lines, he only saw in all two pairs of Hooded crows, so surely and relentlessly do the keepers eradicate them: and even as ornithologists, we can say but little in their praise. The place of those killed does not appear to be taken up by others from abroad, and the "hoodie" is rare on migration on the Caithness coasts. (See statistics of vermin in Appendix.)

130. Corvus frugilegus, *L.* Rook.

Resident, abundant, and rapidly increasing in the east. A few pairs of these birds used to breed in some very low trees near Balnacoil: these, however, have lately been cut down. A solitary pair of rooks built in a birch-tree in a small wood near the same place. To the west, the only rookery we are aware of is at Cama Loch, in low birch-trees. In corroboration of a surmise that they would spread to the wooded shores of Loch Beannoch, near Loch Inver, and there endeavour to displace the herons, in 1877 they did appear and began to build; but the keeper, who told us of the fact, shot them down promptly, and they have not since renewed the attempt. Flocks occasionally crowd the trees round the manse at Inchnadamph, but no attempts have as yet been made at building there.

Rooks have established themselves at the following localities, and the notes appended are the results of an inquiry we began in 1879, according to a circular sent throughout Scotland:—

A very old-established rookery at Dunrobin, with a colony in 1879 of about 300 nests, built upon ash, elm, and Scotch fir. They have been kept in moderate numbers, and have neither increased nor decreased much. They have other roosting-places.

A rookery,—a few years old only, established at Skibo with a colony in 1879 of under 100 nests, and built on Scotch fir and ash, has since increased. Roost elsewhere.

At Crakaig,—age of rookery unknown,—about 100 nests in 1879, in ash-trees; increasing.

At Tongue,—established about 1855,—a colony in 1879 of about 500 nests in Scotch fir. Increasing, and usually roosting at another wood, migrating daily to Far-out Head for food during hard winters.

At Kirkton, rooks first appeared in 1860, the first pair breeding amongst rocks at Bighouse Bay, and afterwards taking to the old fir-woods at Kirkton: they originally came from Westfield, in Caithness. In 1879 there were about 500 nests, and they were still increasing; these birds generally roost in the same wood in which their nests are.

By returns of migration schedules in 1883 from Stoirhead, large flocks of rooks (or "wood crows") came daily to Stoir to feed between the 1st and 30th of August, and in 1884 between the 1st and 25th August. No doubt these belonged to the Cama Loch rookery.[1]

Common, and resident, breeding in almost every suitable plantation, or clump of old trees in the county, such as those at Lyth, Watten, Latheronwheel, Langwell, Forss, Westfield, and Brawl. A few years ago a small colony used to breed in the trees at Sibster House, near Wick (O. MSS.).

Since Mr. Osborne's time the poor rook has been much persecuted, principally by the gamekeepers, who, in Caithness, almost more than any other county in Scotland, wage war upon egg-destroying vermin. The rook has rather a

[1] Mark the curious approximation of the dates of the visits, in the two years.

peculiar history in Caithness. They have made repeated attempts to establish rookeries at many places in the north, as at Barrogill Castle and other wooded areas, however small in dimensions. They attempted even to establish themselves on the house-tops of Wick and Pulteneytown, building on the summits of unused chimneys. They were so much persecuted at Brawl Castle that they left it at last and bred in the heather, on Skinnet Hill, near the old site, and a few build regularly in single trees in Thurso, and inside the chimney-cans of the Town Hall (Mr. W. Dunbar). They were also observed occupying chimney-tops in Thurso by Mr. S. G. Reid, but we did not observe them in 1885.

The following list of the rookeries of Caithness, which we have every reason to believe is complete, is supplied to us by Mr. L. Dunbar :—

1. At Brawl Castle, Sir T. Sinclair's property, there were about 100 pairs in 1875. This rookery is about a hundred years old, and is placed in ash, plane, beech, and elm trees, but the birds have decreased of late years. They roost at the rookery in winter.

2. At Geise, also on the property of Sir Tollemache, there was another rookery of about 40 pairs in 1875. This rookery is about forty years old, and is placed in ash, plane, and beech trees, and has decreased of late years. The birds do not roost at the rookery in winter.

3. At Mina Villa, Thurso (Mr. W. R. Tait), for fourteen years previous to 1875, some 20 pairs bred, but have now decreased in numbers. They do not roost at the rookery in winter.

4. At Stemster (Mr. A. Henderson) there is a rookery of 200 pairs or thereby, in Scotch fir, ash, beech, and plane, about fifteen years established. They do not roost at the rookery in winter.

5. Forss—a rookery of about 150 pairs, in ash, beech, plane, and elm, about twenty years established. They do not roost in winter there.

The following are all in similar timber growth, which indeed constitutes most of the wooded areas of Caithness:—

6. Westfield; 250 pairs; fifty years established; do not roost in winter here.

7. Olrig; 100 pairs; twenty years established.

8. Castlehill; 50 pairs; twenty years established.

9. Barrock; 150 pairs; thirty years established.

And, besides the above, there are those already mentioned as nesting in Thurso and Wick.

Mr. Wm. Reid has added the note—"Rooks have multiplied in Caithness of late years, and several new rookeries have been established"; one "last year," for the first time, at Hempriggs (Mr. W. Reid's notes, dated 1870).

131. Corvus corax, *L.* Raven.

Resident, only a few pairs breeding in certain localities throughout the eastern district; most abundant in the late spring and autumn. Near Balnacoil there is a rock in which more than a hundred ravens used to roost, as late as 1878; there was another rock where great numbers also used to roost, but this has been deserted for years, so probably they took to the other locality mentioned before.[1] Common in the west, though much persecuted, but scarcely so abundant as some eight or ten years previous to 1877. Scarcer around Durness, though by no means approaching extinction in 1882; and seen occasionally by the lighthouse keepers at Cape Wrath, as stated in the migration schedules.

A pretty regular crop of ravens is found annually, as shown in the following notes:—

In Assynt in 1870	. 7	And in Durness in 1874	. 11
„ 1871	. 10	„ „ 1875	. 10
„ 1872	. 18	„ „ 1876	. 14
„ 1873	. 19	„ „ 1877	. 14

[1] These congregations of ravens are not common in Scotland; other localities known to us where they occur, are at certain points of the Wigtownshire coast, and the hills of the Stewartry of Kirkcudbright.

In Assynt in 1874	17	And in Durness in 1878	9
„ 1875	24	„ „ 1879	16
„ 1876	10		
„ 1877	7		
„ 1878	2		
„ 1879	1		

Total in Durness and Assynt in ten years, ... 189
In the Reay Forest in six years to 1880, ... 112
And by another hand in same place in seven years—1873 to 1879, ... 224
In Assynt, by one keeper, besides the above, . . . 134
At Dunrobin, 1873-80, ... 202
Assynt, by another hand, ... 31
Total killed in the county, so far as our returns show in a single decade, 662 ravens, which, at a premium of 2s. 6d. each, represents money to the amount of £82, 15s.

In the winter of 1885-86 one keeper poisoned a dead kelt on the bank of the river Naver, and accounted for between 20 and 30 ravens. It does seem a pity to destroy such numbers of these truly noble Corvidæ, and where little or no sympathy is extended to hooded and carrion crows, some might be granted towards the ravens, and they at least might be allowed to benefit by the dead kelts, carrion, and garbage, such being by far their most favourite food, as we have times without number observed, both at home and abroad.

Generally distributed through the county, but diminishing yearly in numbers. Thirty or forty years ago (previous to 1867) the raven was very abundant, while the hooded crow, so report goes, was very rare; now, it is just the reverse. This is confirmed by Mr. Osborne's own experience (O. MSS., 1868).

There are two specimens in the collection at Welbeck Abbey. They are sufficiently rare in the county now to make the record of interest, and could the dates be added the interest would be increased. Holborn Head, amongst others, was a breeding-place in Mr. Wolley's time, in 1849 (Woll. *B.-E.*, 111 and 248). It was decidedly very rare in

1885. They bred on the south face of Stack of Wick in 1884, but were extirpated by the keeper by rifle practice, at a range of about 250 yards. Harvie-Brown saw the range in 1885. Many bullets were expended before the final glory and the proud moment of extirpation was achieved.

Order 2. MACROCHIRES.

Family CYPSELIDÆ.

132. Cypselus apus (*L.*). Common Swift.

Summer visitant, breeding in suitable localities along the south-east coast, but not plentiful. Seen at Badenloch, in the centre of the county, but does not breed there. Never observed in the west, nor have we seen them anywhere in the north. Though reported as common about the limestone cliffs of Durness, and breeding in the Great Smoo Cave and elsewhere in the vicinity, we saw nothing of them there in 1881. At Tongue Mr. Crawford has twice seen swifts, but they did not remain to breed, and tarried only for two or three days. Mr. Booth observed a few, however, near Durness, and again between Castletown and Dunnet Head in Caithness. One was seen on Loch Shin near Lairg by us in the beginning of July 1885. It may seem trivial to many English ornithologists to give these records, but it is not trivial, if we desire to arrive at minute distributional and migrational data.

A well-known summer visitant (O. MSS., 1868).

Previously recorded as common prior to 1862 (O. and Sh. List, 1862). Noted by Mr. William Reid (W. R.'s List).

Seen in the town of Thurso by Harvie-Brown; also a company of seven apparently migrating, flying due east, and swiftly careering above the cliff edge of Holborn Head,

and crossing Thurso Bay in a direct line; none seen again till driving along the east coast near to Latheron.

We would not consider the swift common in Caithness at the present time, but it is a summer visitant, and also a passing migrant.

133 Cypselus melba (*L.*). White-bellied Swift.

134. Acanthylis caudacuta (*Lath.*). Needle-tailed Swift.

Family **CAPRIMULGIDÆ**.

135. Caprimulgus europæus, *L.* Nightjar.

A summer visitant; occurring pretty frequently in suitable localities in the east, and no doubt will increase its range with the growth of the young plantations. Up to 1875 apparently perfectly unknown in Assynt, its last outpost being Rosehall at that time. Was first observed at Cashel-dhu, near the head of Loch Erriboll, in 1882, when a pair was frequently observed, and one was unfortunately shot by the keeper—Mr. Murray—in whose hands it now is. The first we ourselves ever saw in the west was in July 1883 at Loch Inver, but they were reported to us as having occurred for some few years before that date. In July 1883 one constantly hawked for insects close round the Loch Inver Hotel in the evenings. Once observed at Tongue many years ago by Mr. Crawford.

A regular summer visitant, specimens having been obtained from Stirkoke and Watten to Berriedale (O. MSS., 1868).

One—a male—is recorded by Mr. L. Dunbar, shot by Nicol MacNicol, gamekeeper at Sandside, marked as "very rare." It was preserved by,—and was, or is now, in the possession of,—Mr. L. Dunbar at Thurso, and bears date of 4th of June 1883. We have also Mr. Reid's authority for

its occurrence in the county. Harting (*Handbook of British Birds*) appears to have been satisfied as to its occurrence "to the north of Caithness" as early as 1872 (*op. cit.* p. 35).

136. **Caprimulgus ruficollis**, *Temm.* Russet-necked Nightjar.

Order 3. PICI.

Family PICIDÆ.

137. **Dryocopus martius** (*L.*). Great Black Woodpecker.

138. **Picus major**, *L.* Greater Spotted Woodpecker.

Accidental winter visitant; in 1862 very abundant, having been shot in almost every part of the east of the county, even on Ben Clibrick, but several years may pass without one being seen.

Two are mentioned as having been shot by Sheriff Mackenzie in the garden at Dornoch Castle, and a female at Golspie (Mr. Mackenzie, *in lit.* 10/2/72). There is one of these in the Dunrobin Museum.

Mr. Reid of Wick has a note of this bird "got in numbers" in Oct. 1868, during a gale; they appeared in the gardens, and were seen running up the clothes-posts; trees being decidedly scarce in the county, they had to take to these as the best substitutes.

139. **Picus minor**, *L.* Lesser Spotted Woodpecker.

[Said to have been observed in a garden near Wick, and is also on Sinclair's List (O. MSS., 1868).

See also Sh. and O.'s List, where it is included as only once observed.]

Picus villosus, *L.* Hairy Woodpecker.

[Not numbered, because of doubtful occurrence in Britain.]

140. Gecinus viridis (*L.*). Green Woodpecker.

[*Obs.*—There is one in the Dunrobin Museum marked "Bonar, 1848," but this requires confirmation.]

Sub-family *IYNGINÆ.*

141. Jynx torquilla, *L.* Wryneck.

[Mr. Robert Gray mentions it as occurring in Sutherland thus: "The most northern locality for its occurrence in the mainland of Scotland is Sutherlandshire," etc., but we have no corroborative testimony of its occurrence in this county.]

"Two examples of this interesting little bird have occurred in Caithness. The first specimen was got among the trees at Rosebank, while the plantations at Stirkoke furnished the second, which was obtained some five or six years ago." (H. Osb. in MSS., 1862.)

One of these specimens was re-stuffed by Mr. Small, naturalist, Edinburgh, for Mr. Osborne.

Series DESMOGNATHÆ.

Order 1. COCCYGES.

Sub-order *COCCYGES ANISODACTYLI.*

Family ALCEDINIDÆ.

142. Alcedo ispida, *L.* Kingfisher.

Rare visitant. There is a specimen in the Dunrobin Museum, and another was killed at the Little Ferry by Eric Ross, one of the Duke of Sutherland's keepers, on February 1, 1878, and was seen in the flesh by Mr. Thomas Mackenzie.

We have no record of this from Caithness. The name king-

fisher is often erroneously applied to the dipper (*Cinclus*) in the north of Scotland.

Family **CORACIIDÆ.**

143. Coracias garrulus, *L.* Roller.

Rare visitant. An example was shot by a nephew of Mr. Fraser, the Fiscal of the county, near Dornoch, and was set up by Mr. Macleay of Inverness. There is a specimen in the Dunrobin Museum labelled "Morvich, June 9, 1854." The Dornoch one was shot much later (*auct.* Dr. J. M. Joass).[1]

" It has been placed on the Caithness list by Mr. R. T. Shearer, who saw a solitary specimen at Ulbster, and observed its movements for two or three days. During that time it was usually followed, or attended, by a small bird, in the same way as the cuckoo is attended" (H. Osborne in MS.).

One—an adult male—is recorded by Mr. L. Dunbar, shot by J. M'Leod at Sandside, in the north-west of the county, in June 1875. It was preserved by Mr. L. Dunbar, and is now at Scotscalder.

Family **MEROPIDÆ.**

144. Merops apiaster, *L.* Common Bee-Eater.

Family **UPUPIDÆ.**

145. Upupa epops, *L.* Hoopoe.

Casual and rare visitant. Mr. Houstoun writes from Kintradwell: "I am sorry I can't give you the dates of when

[1] There was one obtained near Elgin just a week later than the Morvich one. We mention it as undoubtedly part of the same migratory flock.

the hoopoes were got here, but I think it was in the month of September; they were got in the patch of big fir-wood:" these examples occurred in different years. Others, said to have been taken at Golspie in June 1850, and again in 1858, are in the Dunrobin Museum. In a list from Mr. Dunbar of Brawl, sent to the Rev. Dr. Gordon, note is taken of one killed at Skibo by Mr. Dempster's keeper in 1832 or 1833. Mr. Dunbar saw the bird. One shot about the 22d May 1886 near Durness, was stuffed by Mr. W. M'Leay.—Vide *Northern Chronicle*, 26th May 1886.

Mr. Dunbar records an adult male stoned to death by two boys near Brawl Castle in 1879, the only one ever seen there. This is now in Brawl Castle, having been beautifully preserved by Mr. L. Dunbar, and was seen by Harvie-Brown in 1885.

Sub-order *COCCYGES ZYGODACTYLI.*

Family **CUCULIDÆ.**

146. Cuculus canorus, *L.* Cuckoo.

Summer visitant; abundant in every part of the eastern district of the county, even on the barest hillsides. Abundant also in the west, and indeed all over the county in the glens and hill-sides, but not ascending very high among the hills. Heard for the first time at Inchnadamph on 23d May 1877; season cold and backward, and many migratory birds were that year later of arrival there than is usually the case.

A common summer visitant in Caithness (O. MSS., 1868). Curiously enough none seen in 1885 by Harvie-Brown.

147. Coccystes glandarius (*L.*). Great Spotted Cuckoo.

148. Coccyzus americanus (*L.*). Yellow-billed Cuckoo.

149. Coccyzus erythropthalmus (*Wils.*). Black-billed Cuckoo.

Order 2. ACCIPITRES.

Sub-order *STRIGES.*

Family STRIGIDÆ.

150. Strix flammea, *L.* Barn Owl.

Very rare in the east; one was shot at Kildonan on the 12th of September 1883, and there are other specimens in the Dunrobin Museum. Rare in the west of the county, but has been known to breed at a certain locality on the south shore of Loch Assynt. We have seen it in autumn (August) when cover-shooting, and, at other times, in the birch-woods at Loch Letteressie, at the west end of Loch Assynt, or nearer Loch Inver. It is known to some of the natives, but not to all. Breeds occasionally at Tongue (J. Crawford); and rarely, or occasionally, about Rosehall.

Mentioned in Dr. Sinclair's List (O. MSS. 1868).

One—an adult female—is recorded by Mr. Dunbar: "Shot by Mr. M'Beath at Dorrery: which found its destination in the Commercial Bank, Thurso." Mr. Reid also mentions its occurrence in the county.

Family BUBONIDÆ.

151. Otus vulgaris (*Flem.*). Long-eared Owl.

Rare, but breeds in the Dunrobin district; will probably extend its range with the increasing number of plantations.

Used to be very common at Rosehall before the large woods were cut down, and occurs also in the woods around Loch Migdale, near Bonar. It is reported as breeding at Tongue; indeed Mr. Thomas Mackenzie received the young from there.

This species occurs on passage at some of the light-houses, as well as its congener, the next species.

Mr. Osborne observes that this species of owl appears to have increased in numbers of late years in the county, and for the last few years it has been ascertained to breed within its bounds. Eggs and young birds have been obtained at Stirkoke, and in some plantations in the parish of Watten and neighbouring districts (O. MSS. 1868).

Mr. L. Dunbar received several specimens in 1880 and 1884, dating Ormly Farm, Thurso, August 14, 1884; Westfield, October 17, 1884; and Shurrery, November 24, 1880, and April 15, 1880. The dates indicate its residence in the county, but there is no specimen of the long-eared owl mentioned in Mr. J. Whitaker's list of the birds at Welbeck Abbey.

152. Asio accipitrinus (*Pall*). Short-eared Owl.

A decidedly rare species, but is recorded by Sheriff Mackenzie as having bred near Dornoch in 1873. On only one occasion have we seen this species in the east of the county. In the west we have only once obtained an egg from the Cromarty side of the march. Mr. A. G. More includes it as breeding regularly in the county. They were said to have bred on an island of Loch Awe, in Assynt, in 1876. We ourselves saw a bird which we felt sure was of this species pass our camping ground by the side of a loch in Stoir, on the night of 13-14th June 1877. In 1886 one was put up out of long heather on an island of Loch Assynt (pointed out to us), and an egg of an owl, sucked by a hooded crow,

was found on another island adjoining, which is now in the collection of Mr. Alex. Brown, who obtained it. A nest was found also at Syre, Strathnaver, in the spring of 1886 (Capt. S. G. Reid's Journals, 1886).

Mr. Osborne records this owl as breeding in the county, and although it is not numerous, it cannot be described as an uncommon species. In the autumn and beginning of winter it is occasionally found amongst turnips, but generally frequents moors and open wastes. As many as sixteen or seventeen of these birds have been found in a turnip field on the north coast, evidently having just arrived there on their migration southward (O. MSS., 1868).

Numerous examples were sent to Mr. L. Dunbar between 1878 and 1883 ; and, dating from August 21st to January 31st, show that the most were sent from the north coast and fewest from the east. There is a preponderance of adult females, and all sent appear to have been adults. Two specimens are in the Welbeck Abbey collection.

153. Syrnium aluco (*L.*). Tawny Owl.

Resident, but not very common ; of most frequent occurrence in the wooded districts of the south-east. Breeds near Balnacoil, Dunrobin, and Rosehall, in which latter place it was unknown forty years ago, when Mr. Macleay of Inverness was a boy there. Mr. Crawford includes it as breeding at Tongue in the north.

This species is mentioned in Dr. Sinclair's List.

One, an adult male, was sent to Mr. L. Dunbar, shot 15th April 1880 by Mr. Donald Ross, gamekeeper, Berriedale, and is now in the Duke of Portland's collection. Mr. L. Dunbar adds the remark that it "breeds there"—*i.e.* near Berriedale. In the list of the collection at Welbeck Abbey this bird appears with the note "of the grey colour"

(J. Whitaker). This grey colour is very remarkable in tawny owls shot in the north; numbers of both the brown and grey variety come to Mr. Macleay, Inverness, for preservation every year, and grey ones equal, if they do not predominate over, the brown.

154. **Nyctea scandiaca** (*L.*). **Snowy Owl.**

A very rare visitant. An example, killed at Achintoul, in the parish of Kildonan, passed through Mr. Macleay's hands, and another was in the collection of the late Mr. Dunbar of Brawl.

A very fine specimen of this bird was obtained by John M'Kenzie at Altnaharrow, Sutherlandshire, in October 1853, and is now in the Milner collection in the Museum at Leeds. It was the first seen in the district, and was shot sitting on a rock in Cnoc Staing.

An occasional visitant to Caithness. A specimen (one of three) in Dr. Sinclair's collection is in the pure white plumage so rarely seen in examples obtained in this country. Mr. Osborne mentions one or two examples, one of which was obtained in April 1867 by a shepherd in Strathmore. It had been trapped, but got loose, and was seen flying about for some days with the trap attached, until at last a shepherd caught it, when it was almost dead from exhaustion. Another Mr. Osborne obtained alive some years ago. It had been shot on a moor at Kilminster, near Wick; one pellet had struck the extreme fleshy tip of one wing, but so slightly that it had quite healed up in a few days. Mr. Osborne has also heard of one or two others having been seen, and considers that it is probable that few winters pass without an individual or two visiting our Caithness moors, well stocked as most of them are, with wild-fowl (O. MSS., 1868).

Mr. Lewis Dunbar records two examples—one adult male obtained in 1876 at Freswick, killed by Mr. Steenson,

was preserved by Mr. Dunbar for Major Keith, Factor to the Earl of Caithness at Barrogill Castle; a second, also an adult male, dating April 4, 1881, was shot at Shurrery by Mr. P. Elder, and was preserved for Mr. J. G. Millais, 2 Palace Gate, Kensington, London, W.

A third specimen, in the collection of F. Raine, Esq., of Durham, was trapped at Ousdale, Ord of Caithness, by James M'Ewan, on 4th July 1876.

155. Surnia ulula, *L.* Hawk Owl.

156. Surnia funerea, *L.* American Hawk Owl.

157. Nyctale tengmalmi (*Gm.*). Tengmalm's Owl.

[St. John records a specimen of this owl killed at Spinningdale in May 1847 by Mr. Dunbar. No trace, however, of this specimen can be obtained.]

Nyctale acadica (*Gmel.*). Acadian Owl.

A doubtful British species. *Not numbered.*

158. Scops giu (*Scop.*). Scops-eared Owl.

We rejected this species from our previous list,[1] but since then we find that this bird was exhibited by Dr. J. A. Smith in November 1854. It was shot in the latter end of May 1854 at Morvich, near Golspie (*Proc. Royal Phys. Society, Edinburgh*, vol. i. p. 4), and Mr. Robert Gray writes that, he "knows nothing (up to the date of publication of the *Birds of the West of Scotland*) that would tend to throw the slightest doubt upon the authenticity of the Sutherlandshire scops-eared owl." Under the circumstances, we see no reason why we should not at least restore it to the list.

Scops asio (*L.*). Mottled Owl. *Not numbered.*

159. Bubo ignavus, *Forst.* Eagle Owl.

160. Athene noctua (*Retz.*). Little Owl.

[1] Appendix to St. John's *Tour in Sutherland*. New Ed. 1884.

Sub-order *ACCIPTRES.*

Family **VULTURIDÆ.**

161. Gyps fulvus (*Gmel.*). Griffon Vulture.

162. Neophron percnopterus (*L.*). Egyptian Vulture.

Family **FALCONIDÆ.**

163. Circus æruginosus (*L.*). Marsh Harrier.

[In a letter to the Rev. Dr. Gordon of Birnie, from the late Mr. Wm. Dunbar, there is a doubtful record of one of these birds said to be in his collection, and to have been shot in the neighbourhood of Bonar Bridge.

[The only mention of this bird as a Caithness species is in the List of Dr. Sinclair (O. MSS., 1868).]

164. Circus cineraceus (*Mont.*). Montagu's Harrier.

165. Circus cyaneus (*L.*). Hen-Harrier.

Resident, and still fairly common in the east, though killed down on every occasion that offers. Like others of the Raptores, the hen-harrier resorts to the same place for nidification year after year, thus leading to its destruction. A pair of birds was shot at the nest in the Dunrobin Forest on May 14, 1881, the male of which had not then attained the adult plumage. Previous to 1877, common in the west, but since then has almost disappeared. Three breeding sites previously known to us have been untenanted for several years. In 1878 not one was seen, and must still be recorded as very rare in 1879.

In Wolley's time hen-harrier's eggs were taken on Rabbit Island, near Tongue, by one Donald Mackay, and sent to him.

Caithness names of this bird are "*Flapper*," "*Blue-Hawk*."

With the exception of the kestrel, and perhaps the merlin, Mr. Osborne considers the hen-harrier the commonest of the Caithness birds of prey—the male in full adult plumage being much seldomer obtained than the female. Of the local names, "Blue-Hawk" is applied only to the adult male. The hen-harrier breeds in the remote moors of the southern division of the county, sometimes in the open wastes, and at others in thick furze coverts. Amongst other varieties of food Mr. Osborne mentions dead fish (O. MSS., 1868).

Many specimens have been sent to Mr. L. Dunbar for preservation. At Barrogill Castle we saw a very fine albino of this species stuffed, and in a separate case. Along with all other species of raptors indigenous to the county, this is marked by Mr. Dunbar as decreasing in numbers. There are three specimens at Welbeck Abbey—an old male in full plumage, a female and a young male; and Mr. Doeg has one, a female, dated "Wick, 3d November 1880, received in the flesh." We note dates, as such may at some future time become useful.

Six specimens of the hen-harrier from Caithness were sold in the collection of F. Raine, Esq., of Durham, dating between 1875 and 1878.

166. Buteo vulgaris, *Leach.* Common Buzzard.

By no means a common species in the east, though a season rarely passes without a few being seen. The only nest that came under our observation in this district was taken from a rock below which the Blackwater, the principal feeder of the Brora river, runs, in May 1874: although, we understand, neither bird was killed, the site does not appear to have been occupied again. There used to be a breeding-place near Loch Naver, but the birds were always trapped or shot before they brought out their young; this was previous to 1869. Much scarcer in the west by 1877 than previously, many old sites being deserted or tenantless. One season

we took no less than eight sets of eggs within a radius of ten miles. In 1877 there was only one nest in the district, but in 1878 a previously occupied site was again used, and young brought out. Reported to us as exceedingly rare in Assynt in 1884.

According to Mr. Osborne this bird appears to be better known in Caithness than the following species, though the only specimen he ever saw in the flesh was shot by Charles Wilkinson at Stirkoke. He observes, however, that if keepers would only bestow a little more attention on the subject, or were able to distinguish the few species shot or trapped by them all the year round, it is likely that this bird, as well as one or two others, would not prove so rare as is generally supposed (O. MSS., 1868).

The only Caithness locality whence Mr. L. Dunbar has received the common buzzard is near the north-west county march, and thence only one specimen in 1883. Mr. Doeg obtained two in the flesh in November 1883, but there are "several" very handsome specimens in the Welbeck Abbey collection.

In Mr. Wolley's time it seemed to have been commoner. They bred at Dunnet Head, in the north of the county, in 1849, where Mr. Wolley took eggs (*Egg-Books*, iii. p. 260).

167. Archibuteo lagopus (*Gmel.*). Rough-legged Buzzard.

Very rare autumn visitant. We have seen a specimen from Helmsdale in Mr. Macleay's shop in Inverness, where it had been sent for preservation. Another Sutherland specimen passed through Mr. Macleay's hands; it was killed many years ago at Achany (W. Macleay, *in lit.*, 3/11/68). Mr. M'Leay received at the same time four birds in all.

In a letter from Mr. Dunbar to Mr. Osborne, he says: "I have also to communicate to you that M'Ewan killed a pair of fine rough-legged buzzards on the Langwell property

two years ago, and, I believe, has them preserved in his house" (O. MSS., 1868).

The rough-legged buzzard appears very frequently among the higher hills of Berriedale, Ousdale, and the Ord. Prior to 1878, and between 1874 and 1878, Donald Ross, gamekeeper, killed six examples—three females, two males, and one young bird. Three of these were sent to Mr. L. Dunbar for preservation (Dunbar).

Mr. Doeg also received a male and a female rough-legged buzzard obtained at Ousdale, and sent in the flesh, 28th November 1883, and there are numerous specimens in the Welbeck Abbey collection, "one," Mr. J. Whitaker informs us, "a very dark-coloured one." A very fine old male was recorded as shot in Caithness some years ago by Dr. J. A. Smith in the *Proc. Royal Phys. Soc. Edin.*, 26th Feb. 1874.

168. Aquila clanga, *Pall.* Larger Spotted Eagle.

169. Aquila chrysætos (*L.*). The Golden Eagle.

Resident, still abundant, and generally distributed wherever suitable rest and quiet is afforded. Not now so much killed down as formerly, when, about 1834, in three years' time no less than 171 full-grown eagles, besides 53 young birds and eggs, were destroyed (Selby ; and see Appendix to this volume). In 1877 Mr. Crawford, Tongue, considered there had been a decrease of eagles owing to extravagant prices offered by collectors. It appeared to have become very rare, verging on extinction, by 1848 (Wolley's *Egg-Books*). In 1886 young were captured near Brora (*auct.* Savile G. Reid). It is not our intention here to make public all the eyries of the county, though we believe almost every site is known to us. Most abundant in the west and north, rarer in the east and south; we are, however, glad to be able to add that one eyrie, for years deserted, and situated in the

south-east, has again been tenanted for the last two or three years, and most of the other eyries are still used.

In one glen six of these birds have been seen at one time; some of these would probably be young birds reared by a pair of birds that breed regularly there.

Two or three specimens of this bird are shot or trapped every year in the southern part of Caithness, but it is not known to breed. Berriedale and Ousdale produce the greater number of these, which are obtained principally in the autumn and winter (O. MSS., 1868).

In the British Museum is an immature male golden eagle, with two distinct white shoulder epaulettes, as in the Imperial eagle, and we have seen others shot in this county having the same markings.[1] One of these we saw in the collection of Mr. Lewis Dunbar at Thurso. The one in the British Museum was shot at Berriedale by Mr. D. Ross, gamekeeper, on February 18, 1878, and was purchased from Mr. L. Dunbar for the British Museum by Dr. Gunther. Ousdale, to the south of Berriedale, seems to be a favourite place of call for eagles on passage, many having been obtained by the keeper there, especially in the year 1879, when, between April 8th and May 13th, he obtained no less than five (L. Dunbar). Mr. Dunbar notes the golden eagle as increasing in numbers, whereas all other indigenous raptors are marked as decreasing. In the Welbeck collection are three specimens, one a very fine old bird (J. Whitaker).

170. Haliætus albicilla (*L.*). White-tailed Eagle.

Resident; not so abundant as the golden eagle in this county, and their eyries principally confined to the coast-line, and can be counted on one's fingers. A position, said to be perfectly inaccessible, is at a point a little east of Whiten Head, on the north coast. Another, nearer Cape Wrath, is

[1] This epauletting appears to occur only in immature birds.

not inaccessible, though nearly so. Some years ago one of the birds from this nest was destroyed by a well-known writer on Highland sports; since then the remaining bird has not taken to itself another partner. In 1850 white-tailed eagles bred in Aardvaar, Assynt, and in West Cromarty (Woll. *E.-B.*, iii. p. 461). John Sutherland of Inchnadamph writes also to Mr. Wolley on 7th July 1851: "I have destroyed all the golden eagles that used to breed in this part of the country. Last winter I killed twelve eagles in the Assynt district." In the east there is no eyrie known to us in Sutherland. An albino variety of this bird was killed at Achinduich, in the parish of Lairg, in November 1859. The last specimen we handled from this locality was killed in spring, about the year 1872, at Kintradwell; another, killed in the spring of 1882 at Durness, came into Inverness for preservation.

In 1849 Mr. W. Dunbar offered 10s. each for eagles throughout the county of Sutherland; and Bantock — at that time gamekeeper to the Duke of Sutherland—10s. each for eggs. In 1849, when Wolley was in Sutherland, white-tailed eagles were much more abundant, and frequented many inland localities. They bred on "Sal-en-geyers," a rock on Ben Hee, which is at least ten miles from the sea, and there used to be a nest on an island on Loch Fiag in long heather. "The young of this latter nest were taken three or four years ago by a Mr. Gilchrist, and birds had not bred there since" (Wolley's *Egg-Books*, and *Ooth. Wolleyana*, p. 52).

In 1868 Mr. Osborne speaks of this species as a commoner bird in the county than the former, having bred for a long time back in the cliffs at Dunnet Head. Another breeding-place, now for some years deserted, was at the cliffs of the Ord, in the south-east of the county. The white-tailed eagle only occasionally visits the inland districts of the east coast. One is noted, quite as a rarity, by Mr. Osborne

as appearing and spreading dismay among the sea-fowl on the east coast in the summer of 1861 (O. MSS., 1868). The rarity of this fine species for years back may be instanced by the fact that Mr. L. Dunbar has received none for preservation since 1878, the date at which he began to keep records of everything sent to him for stuffing. Nor since 1880 has Mr. W. H. Doeg, of Manchester, received a single bird of this species from Caithness, amongst many other rarities he has obtained. We are not aware that a single pair now breeds in the county, but in the Welbeck Abbey collection there are two good specimens.

Mr. Wolley obtained eggs in 1849 from Dunnet Head, and the following year the birds shifted their position about a quarter of a mile west.

171. Astur palumbarius (*L.*). Goshawk.

Mr. Robert Gray, in his *Birds of the West of Scotland*, appears to have included this as a "rare species in the parish of Golspie," thirty years ago, *i.e.* previous to 1871; but we have failed to find his authority.

Almost entirely unknown in Caithness. It has a place in Dr. Sinclair's List, and that is the only recorded instance of its occurrence in the county up to date that he is aware of (O. MSS., 1868).

There is also a goshawk included in Mr. L. Dunbar's List sent to him for preservation prior to 1878, marked a male, and destination Brawl Castle.[1]

Another Caithness specimen of the goshawk was in the collection of F. Raine, Esq., of Durham. It was trapped by James MacEwan, Ousdale, Ord of Caithness, date 2/12/76.

172. Accipiter nisus (*L.*). Sparrow-hawk.

Resident; a partially migratory species, numbers of young birds appearing about the cultivated grounds in the autumn. As

[1] The most of the Brawl Castle birds appear to have been dispersed from time to time, and consequently it is now very difficult to trace the specimens.

early as 1863, Wolley received eggs from Sutherland sent by Mr. W. Dunbar. This bird is increasing very much in the south-east, probably on account of the number of plantations of Scotch fir which are springing up, as in 1870 we only knew of one nest in the immediate vicinity of Brora, and now (1884) the keeper there was complaining to us of their numbers. It is holding its own, in spite of persecutions at Tongue, though other hawks are becoming scarce, but it is not known as yet in the west. We have never seen the nest of this species in birch-woods in Sutherland, but Mr. Booth mentions the fact of their breeding in such places, as, for instance, in an old hooded crow's nest on a birch-tree at Loch Craggie.

Mr. Osborne states that the sparrow-hawk may be described as being but rarely seen, and still more rarely obtained in Caithness, and says the only recent specimen he has seen was shot at Stirkoke by R. Ross, at one time gamekeeper there (O. MSS., 1868).

A good many sparrow-hawks appear in Mr. L. Dunbar's list of birds he has preserved, all, however, dating between 1881 and 1883. The localities mentioned are Westfield (two, January and February 1881); Rattar (January 1882); Sandside (August 1883); Sandside (December 1883); Brawl Castle (December 1883); Brawl (December 22, 1883); and Thurso Castle (December 29, 1883). We give the dates, as of interest for migrational data.

173. Milvus ictinus, *Savigny.* Kite.

At one time a common bird, the kite is now extinct, nor does a Sutherland specimen exist in the Dunrobin Museum, though there was one in the collection of the late Mr. Dunbar of Brawl. Mr. Macleay, the well-known bird-stuffer in Inverness, writes to us: "When I was a boy the kite was a very common bird in Sutherland, and I once got its nest. It was no uncommon thing to see half-a-dozen together, circling about in the air at Rosehall." Since then the

cutting down of all the large trees and continued trapping have done their work, and the kite exists there no longer. Some fifty years ago the kite used to be seen in the Helmsdale Strath, but our informant could not say whether it nested there. It had become rare by St. John's time, in 1849. Mr. Stewart, who has been thirty years gamekeeper at Inverpolly, only remembers, during that time, of seeing one pair of kites there, a tale to the effect that old and young were killed as specimens for the sub-tenant in 1884 being ignored or denied.

No instance of its occurrence in Caithness is known to us.

174. Milvus migrans (*Bodd*). Black Kite.

175. Nauclerus furcatus (*L.*). Swallow-tailed Kite.

176. Elanus caeruleus (*Desf.*). Black-winged Kite.

177. Pernis apivorus (*L.*). Honey-Buzzard.

A rare autumn visitant. Several have, however, been procured, two of which are now in our possession. The first, a female, was killed in the large Uppat woods, near Dunrobin, in July 1879, and in September of the same year a young one, with the down still adhering to the tips of its feathers, was killed at Balnacoil, not far from the same place. Other specimens are in the Dunrobin Museum, one of which was shot at Kildonan, up the Helmsdale Strath.

Only known as a Caithness bird from Dr. Sinclair's List up to date of Osborne's MS. But it is included in Mr. Lewis Dunbar's List, with the following notes: "Honey-buzzard; prior to 1878, Langwell; shot by D. Ross, keeper; young male; kept too long for preservation; but the legs *are* here" (*i.e.* at Thurso, in Mr. L. Dunbar's possession); which note substantiates possibly Dr. Sinclair's record (Dunbar). The legs were seen in Mr. Dunbar's possession by Mr. Bidwell in the autumn of 1886.

178. Falco candicans, *Gmel.* Greenland Falcon.

In the collection of F. Raine, Esq., of Durham, which was sold at Steven's auction-rooms in March 1885, there are two Greenland falcons from Caithness—one an adult male, trapped in the Moss of Freswick on the 3d of May 1876; the other an immature female, trapped at Berriedale by A. M'Ewen, 26th March 1877.

179. Falco islandus, *Gmel.* Iceland Falcon.

A rare visitant; but has occurred on two occasions at least—once at Sciberscross in 1868. This bird is preserved in the Dunrobin Museum. It appears, from a single feather examined, to have been a bird in its second year's plumage—at all events an immature bird of about that age. The other was taken at Altnaharrow, in the centre of the county. There is a third in the collection of the late Mr. Dunbar of Brawl.

Of this fine bird only two instances are on record as having been observed in the county of Caithness. The first is that of a specimen seen near Thurso by W. M. E. Milner, Esq., M.P., in the year 1847; the second is that of one trapped at Ousdale two years ago by M'Ewan, the Duke of Portland's keeper at that place (O. MSS., 1868). What became of the latter specimen we do not know, as it does not appear in the List of the Welbeck Abbey collection, nor in Mr. Lewis Dunbar's List. Of the former, the only trace we have is an Iceland falcon included in the List of the Milner collection, without any remark, which List was drawn up by Mr. James Wright of Rawcliffe Hall, Selby, for the Curators of the Leeds Philosophical and Literary Society.[1]

Mr. Reid mentions that this species has occurred four or five times in Caithness, and refers to the *Field*, but gives no dates.

[1] Annual Report, 1880-81. The Milner collection is now in the Museum at Leeds.

180. Falco peregrinus, *Tunstall.* Peregrine Falcon.

Resident, and still holds its ground, despite the incessant persecution it receives from keepers. This is the "Falcon" of the Highland keeper, who rarely calls it by any other name; being extremely difficult to trap, the birds are generally shot during the nesting season. Some eyries have been deserted in our recollection, while others again have been formed; the absence of suitable nesting-places make them rarer in the east than in the west. In the deer-forests of Dunrobin and Ben Armine peregrines are rather preserved than otherwise.

Still fairly abundant in the west, and we know of about eight eyries on the north and west coasts between Whiten Head and Loch Inver, and about eight inland eyries in Assynt within a radius of ten miles. Not much decreased of late years, though many are killed.

Our experience in regard to this and other species of birds is, that whenever the old ones are killed the old nesting-place is occupied the next season by others, very probably young birds which have escaped destruction in former years; but the re-occupation of favourite breeding haunts by many species, after temporary desertion, may possibly be explained under certain phenomena of migration, and certain fixed lines by which species travel.

The game-hawk frequents the coasts almost the whole year round (Cape Wrath Migration Schedule), also Stoir Head (probably the Handa pair).

Notwithstanding the war waged against it, the peregrine cannot be regarded as a rare bird in Caithness, the places where it is most abundant being on the inaccessible rocks of the coast. Vast numbers of these birds are shot or trapped every year, but several broods escape destruction yearly. It appears to be resident the year round. Mr. Osborne gives a graphic account of a peregrine hunting a hen-harrier, apparently more for the sport than from any intention of

killing it. A good many pairs still succeed in bringing off their young on the east coast between Duncansbay and the Ord. Its favourite food is rock-pigeons and water-fowl (O. MSS., 1868).

We found several pairs in 1885 nesting in the high cliffs of the north coast, and one fine pair of very old birds at Dunnet Head. They are occasionally shot at many inland localities, judging from a list sent us by Mr. L. Dunbar, and another by Mr. Doeg. The absence of any record of the peregrine from the Welbeck Abbey collection seems remarkable.

181. **Falco subbuteo**, *L.* **Hobby.**

Very rare visitant. One example was shot by a brother of Mr. Macleay of Inverness, at Achany, many years ago, and sent to the late Mr. Dunbar of Brawl Castle.

The only specimen known to have been obtained in Caithness by Mr. Osborne was shot or trapped at Thrumster by Charles Wilkinson, keeper to Mr. Akroyd; but it is also mentioned in Dr. Sinclair's List (O. MSS., 1868).

Mr. Reid has also observed it in the county.

182. **Falco æsalon**, *Tunstall.* **Merlin.**

Resident, partially migrant to coast-line, common, but not so abundant as formerly; still, certain haunts known in 1870 were occupied in 1882 in Assynt. Considerably shot down in the game-preserving interests. Rarer in the wooded districts of the south-east, but common in the more central ones.

This species appears to have been less common in Mr. Wolley's time, as he "was not sure that he ever saw this bird in Sutherland"; this was in 1852 (cf. *Ootheca Wolleyana*, Part i. p. 105). But in his *Egg-Books* occurs a passage which points to his having received the eggs, for the first time, from Sutherland, from the foot of Ben Hope in Strathmore (*E.-B.*, 678).

In 1885 merlins bred in an old hawk's (?) (Hooded Crow's ?) nest in a tree at Loch Gruagach, Assynt, and were taken by Mr. Tennent and the keeper. This is an unusual site in Scotland.

Resident, and breeds in Caithness. Mr. Osborne observed one of these birds dash into a company of swallows, select a victim, and catch it at the third turn (O. MSS., 1868).

Many specimens reach Mr. L. Dunbar, and in 1885 I saw some beautifully stuffed old males, and birds of various ages in his house. They seem still abundant. The following localities where they have been shot show this—between the years 1878 and 1885—Spittal, Brawl, Brawl Castle, Westfield, Barrogill Castle, Braemore, Hill of Forss, Thurso, Sandside, Dorrery, Achaversdale: and all these were sent to Mr. Dunbar alone.

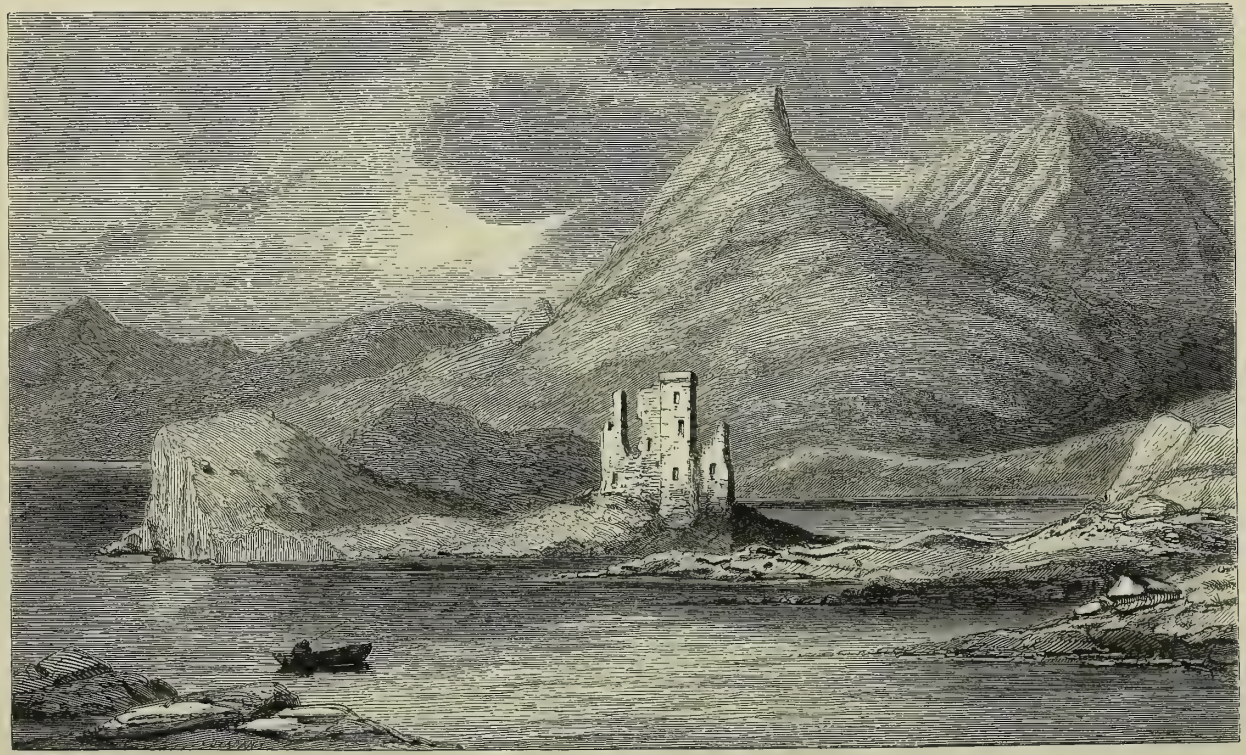
183. **Falco vespertinus**, *L.* **Red-legged Falcon.**

184. **Falco tinnunculus**, *L.* **Kestrel.**

Breeding visitant; rarely resident; very common in the east throughout the breeding-season, laying its eggs in any convenient hole in the rocky burnsides so numerous in the Highlands. The birds generally leave the higher ground about September, and migrate to the coast, where they remain a short time before going further south. The earliest date on which we have seen this bird is February 17, 1884, but in this case it may have remained through the winter, which was extremely mild.

Resident at Tongue, but scarcer in winter than in summer; indeed probably the exceptions are residents.

Common also throughout the central districts of the county, in the same way and in similar localities. Very abundant in the west, where it is much less persecuted than formerly, its general harmlessness being now acknowledged by most Highland keepers.



Ardvrak Castle, Loch Assynt, Sutherland—Old Site of Osprey's Nest.

The most plentiful of all birds of prey in Caithness, where it goes by the name of "Red Hawk." Much more plentiful in summer than winter. Mr. Osborne observes that there is little or no difference in size between the sexes, unlike the other hawks; indeed, in a few instances, where an examination was made, the male was the larger of the two. The stomach of one specimen examined by Mr. Osborne was distended with common dung-beetles (*Scarabæus stercorarius*) (O. MSS., 1868).

Can scarcely now be called the most abundant species amongst the birds of prey of Caithness. During all our tour of the coast-lines in 1885, we only saw a pair at Dunnet Head and a pair at Berriedale, and they are reckoned rare by the gamekeeper upon the Dunbeath moors.

Perhaps in no county in Scotland are "vermin" more systematically suppressed than in Caithness, as will be understood when we treat of such species as the hooded crow and lesser black-backed gull. Keepers in Caithness do not acknowledge the harmlessness of the kestrel.

185. **Falco cenchris**, *Naum.* **Lesser Kestrel.**

186. **Pandion haliætus** (*L.*). **Osprey.**

Quite extinct as a breeding species in the county. Old sites are Ardvrack Castle, on Loch Assynt, and a "stack" of rock in a loch near Gualin shooting-lodge. It was reported to have returned to this latter site in 1881, but this was not corroborated; the remains of this old nest near Gualin were still visible in 1881. The osprey was never recorded as breeding anywhere in the east of the county, no doubt on account of the lack of suitable sites. In 1834 Sir W. Jardine's party saw four ospreys on the wing at the same time, hovering over the mouth of the Laxford river; such a sight can never be witnessed there now. By 1848, ospreys had become "very rare" (W. Dunbar, *in lit.* to

Mr. Wolley). In 1850, ospreys were not disturbed (Woll. *E.-B.*, p. 436). In the third week of June 1879, an osprey haunted Loch Brora for a week, and in May 1881, and again in the same month of 1883, we saw an osprey flying up the higher reaches of the Helmsdale. In 1881 a young bird was shot in Glencassley in November, and this is now in Glencassley House. Since then ospreys, singly or in pairs, have not unfrequently been seen—indeed almost annually. In 1885, at Assynt (*ex ore*), and at Kyle of Sutherland (Journ., S. G. Reid).

In a letter from Mr. Dunbar, dated Brawl Castle, September 19, 1867, to Mr. Osborne, he observes: "The osprey frequents the Thurso river almost every April on its migratory flight, no doubt on its way to some of its breeding-places in Sutherlandshire, but I never succeeded, nor have any of the sportsmen ever been able to capture one, although they have often seen them; the only one who has ever succeeded in killing a specimen in Caithness is Mr. Donald Ross, head gamekeeper to the Duke of Portland. He killed, some few years ago, a fine specimen on the river Langwell, while the bird was fishing" (O. MSS., 1868). This bird, no doubt, is the one at present in the Welbeck Abbey collection (J. Whitaker).

Order 3. **STEGANOPODES.**

Family **PELECANIDÆ.**

187. Phalacrocorax carbo (*L.*). Cormorant.

Common, and resident, though not breeding on the south-east coast; a few go far inland to feed.

The principal colonies known to us are Badcall Islands, in the west—but are fast decreasing there from persecution—and a very fine colony indeed close to Whiten Head; on

"The Maiden's Rocks," and on the bold cone of the headland itself, at a height of about 350 feet. At that distance, with binoculars, the white thigh-spots were quite distinctly visible. A man scaled the face one day and brought down a shawlful of eggs. Rare on Handa, choosing the highest ledges, just under the summits of the perpendicular cliffs.

A local name for this bird in Caithness is the "*Palmer Scarf.*"

It is an abundant and indigenous species in the county. It breeds on high and exposed ledges of rock, and here the number of eggs never exceeds three, according to Mr. Osborne's observations (O. MSS., 1868).

Mr. Shearer mentions in a note to the *Field*, of date May 17, 1862, that this bird collects the materials for its nest almost, if not entirely, from fresh-water lochs in the interior, taking large bunches, sometimes half the size of its body, but he does not say of what the materials consist.

Harvie-Brown's experience of this species in 1885 is that it is far from being abundant, *i.e.* not for a moment to compare with many west coast districts, nor Whiten Head, on the Sutherlandshire north coast, but a considerable number are to be found breeding on the high ledges of the Dunnet promontory.

188. **Phalacrocorax graculus** (*L.*). **Shag.**

Common, and resident all round the coasts, not venturing far inland; does not breed on the east coast, but does so abundantly in the caves on the north, and in all suitable localities there. It is rarely found in large colonies, probably owing to the scarcity of ledges of the requisite nature, which, to suit these birds, should overhang deep water.

Caithness name—"*Scarf.*" A common and resident species, never, like the cormorant, resorting to inland localities. In Caithness the shag invariably selects either the sides, top, entrance, or extreme end of some gloomy cave or

vertical fissure in which to place its nest, never on exposed ledges, and only lays two eggs, Mr. Osborne never having heard of a single instance when this number was departed from (O. MSS., 1868).

Very common along the whole coast, especially at Duncansbay Head and southwards. Also breeding (or merely resting?) on high grassy ledges in the yellow sandstone cliffs of Dunnet, curiously enough, in similar situations as those chosen by the cormorants, a most unusual departure from their almost invariable habit.

189. Sula bassana (*L.*). Gannet.

An occasional visitant to the east coast, not rare, and old birds most abundant. The regular streams of migration of the gannets round our islands are worthy of attention, flying east and north along the north coast in spring, and flying west daily in autumn. Between 2150 and 3080 have been estimated to fly westward within view of Cape Wrath during fifteen days noted, between 14th July and 9th August. They pass between 7 A.M. and 10 P.M. each day, in all winds and weathers. (See *Migration Report*, 1872, p. 41.)

A common summer visitor to the Caithness coast, but does not breed, appearing merely to follow the shoals of herrings that abound at that season. "A curious feature in their local history is that they are observed invariably to fly in a northward direction; that, while they follow the east coast on their journey northward, their return must be effected by some other route, as the bird is seldom or never seen on the east coast of Caithness to pursue a southward course" (H. Osborne in MSS.).

Their migrations are undoubtedly influenced by those of the herring directly, to and fro, the migrations of the latter, so far as understood distinctly pointing to that conclusion.

Order 4. HERODII.

Family ARDEIDÆ.

190. Ardea cinerea, *L.* Heron.

Resident, apparently more numerous in winter. Only one heronry is known to us in the east of the county, which, up to 1873, was situated on the south side of Loch Brora, but afterwards the birds removed to the Gordonbush woods on the north side. Herons frequent the inland burns as long as the weather is open, but when severe, they come down to the coast. A few pairs bred on the large island near Syre, on the Naver, in 1885, but not in 1886 (Savile G. Reid's Journals). There was also one nest in 1886 in the cliffs of Combe Island, Betty Hill (*loc. cit.*).

Some of the principal heronries in the west are those at Loch Shin, on the island off the Fiag Burn, Loch Alsh (in the peninsular part of Ross-shire), Loch Cama (now extinct, rooks being in possession), Loch Beannoch in Stoir, Loch-na-Clash-fearn in Edderachyllis, etc. Scarcer at Loch Beannoch in 1877 than formerly.

A colony is mentioned by Mr. Wolley as existing two or three miles south of Golspie, "according to Mr. Bantock," in 1849.

Common, and resident, breeding in the high sea-cliffs, preferring those ledges where they can get ivy or any other sort of herbage as a foundation for their nests (O. MSS.). Wolley notes it as breeding at the Clett at Holborn Head (*E.-B.*, vol. iii.). Harvie-Brown met with the species there, and at several other localities.

191. Ardea purpurea, *L.* Purple Heron.

[Has a place in the Caithness list of Dr. Sinclair; and Dr. Wilson mentions having seen it afterwards in that gentleman's collection. The O. S. A. mentions it as having been obtained in the parish of Wick.]

192. Ardea alba, *L.* Great White Heron.

193. Ardea garzetta, *L.* Lesser Egret.

194. Ardea bubulcus, *Audouin.* Buff-backed Heron.

195. Ardea ralloides, *Scop.* Squacco Heron.

196. Ardetta minuta (*L.*). Little Bittern.

197. Nycticorax griseus (*L.*). Night Heron.

198. Botaurus stellaris (*L.*). Bittern.

Mr. Gray (*Birds of the West of Scotland*, p. 279) says: "In the east of Scotland the distribution of the bittern extends from Berwick to Caithness."

Mr. L. Dunbar records one shot by Mr. J. M'Leod at Sandside on March 25, 1880, which was stuffed by Mr. Dunbar, and is now at Welbeck Abbey. Noted as "rare; showed fight with his crest up. The only specimen seen." This bird, no doubt, is the one included in the list sent by Mr. J. Whitaker as still in the collection.

199. Botaurus lentiginosus (*Mont.*). American Bittern.

One specimen of this rare European visitant was shot at Latheronwheel, and became the property of Major Stocks, late 1st Royal Dragoons, who was present when it was shot by Frederic Stocks Bentley Innes in 1863. The bird rose out of a bunch of rushes, having been pointed by a pointer dog, and flew very heavily, as if exhausted. We saw this

bird in Mr. Small's shop in Edinburgh, in September 1885, in fine preservation. Mr. Small had purchased it about twenty-seven months previously at a sale at Dowell's Auction Rooms, and soon after sold it to the Earl of Haddington, in whose collection it now is. Full particulars of its capture are given on a label on the back of the case; and it was also recorded in vol. iii. pp. 182-83 of the *Proc. Royal Phys. Soc. of Edinburgh.*

Family **CICONIIDÆ.**

200. Ciconia alba, *Bechst.* White Stork.

201. Ciconia nigra (*L.*). Black Stork.

Family **PLATALEIDÆ.**

202. Platalea leucorodia, *L.* Spoonbill.

Family **IBIDÆ.**

203. Plegadis falcinellus (*L.*). Glossy Ibis.

Order 5. ANSERES.

Family **ANATIDÆ.**

204. Chenalopex ægyptiaca (*Gm.*). Egyptian Goose.

205. Anser cinereus (*Meyer*). Grey-lag Goose.

A summer visitant, not rare, but has become much scarcer within the last fifteen years, though not now so much shot at in the "flapper" stage as formerly. Less common in the south-east than in the central districts, the large lochs near Badenloch being an assemblage-ground for the geese of that district. Arrives about the beginning of March, and leaves the middle of September.

Still not rare in the west, especially on a loch in West Cromarty. It is high time, however, that something were being done to restrict the senseless slaughter of this interesting species. Many, apparently barren—or otherwise immature—birds, flock together in summer in the west, while others are engaged in incubation at the same time and place.

In 1849 Mr. M'Iver of Scourie informed Mr. Wolley that "in the Duke's permission to the Messrs. Turner to shoot wild-fowl in the county, not for sporting purposes," there were excepted ospreys and wild-geese. It seems a pity that at the present day something cannot be done by those who alone can do it—we mean the Duke and his factors—to prevent the extermination of the grey-lag goose, the only British breeding species of the geese. We would desire once again to draw attention to the senseless havoc committed against this species, and for that purpose refer our readers to our remarks in Dresser's *Birds of Europe*, vol. vi. p. 357. There are ever-increasing numbers of localities where it *once* bred, but *now* no longer is found, such as Loch Shin and Calva Island, which were mentioned as breeding haunts by Wolley. In 1852 it is supposed there were from twenty to thirty pairs (*E.-B.*, p. 608). In 1866 reported as having almost entirely deserted Loch Urigil, and much diminished on Loch Loyal, where only one pair bred in 1886 (Savile G. Reid's Journals). Can the Sutherland Association and the proprietors together not do something to stop this wretched extermination? As early indeed as 1882 Mr. J. C. M. Wallis laments:—"Seven birds on Loch, and only one nest; seven birds on Eilean ——, and only one nest, and in each case birds very careless of nest. If this goes on grey-lag goose will die out" (*in lit.*). Mr. Jennins speaks of it as only occasional in the Dornoch Firth in winter.

Mr. Osborne notes this as a regular visitant to Caithness, a

good many pairs remaining to breed in one or two inland districts (O. MSS., 1868).

Decreasing, and several nesting-places have lately been deserted. Something should be done to preserve these birds by the proprietors, even to the extent of a clause in their sporting leases to tenants. The grey-lag promises to become not only the rarest grey goose in Britain at all seasons, but among the rarest perhaps in Europe as regards distributional area and numbers, both of which are comparatively limited.

206. Anser segetum (*Gmel.*). Bean Goose.

[It occurs but rarely in Caithness (O. MSS.).

Mr. L. Dunbar records one shot at Brawl, Strathmore, May 12, 1883, by —— Ross, gamekeeper; adult male, but no destination for this specimen is given. It is entered alongside the grey-lag goose, so is likely to be correct.]

207. Anser brachyrynchus, *Baill.* Pink-footed Goose.

208. Anser albifrons (*Scop.*). White-fronted Goose.

According to Mr. Osborne, not an uncommon species in Caithness (O. MSS., 1868).

209. Bernicla brenta (*Pall.*). Brent Goose.

A winter visitant to the east coast of Sutherland, but not arriving until very late in the season. Marked as common by Mr. Jennins.

As rare a species in the county as the foregoing (O. MSS.). Occurred in unusual numbers on the east coast of Scotland in winter of 1885-86 (J. A. H.-B.).

210. Bernicla leucopsis (*Bechst.*). Bernacle Goose.

Does not appear to occur in the Dornoch Firth. Mr. Jennins does not include it.

The bernacle is not a regular visitor to the west coast of Scotland, but occurs occasionally at Handa, near Scourie, in the autumn, where specimens have been obtained by Mr. M'Iver.

A rare species in Caithness (O. MSS., 1868).

Mr. L. Dunbar records one, an adult female, shot at Westerdale in 1878 by Mr. Gunn, and preserved by Mr. L. Dunbar, which is now at Barcaldine, Argyllshire. "Very rare here; have only seen three in the flesh" (Dunbar). Another, preserved by Mr. Dunbar, was shot by Mr. D. Innes at Sandside, December 29, 1884, and is also at Barcaldine, Argyllshire (Dunbar).

Mr. Reid has observed both this and the last-mentioned species in the county.

211. Bernicla canadensis (*L.*). Canada Goose.

212. Bernicla ruficollis (*Pall.*). Red-breasted Goose.

[In Dr. Sinclair's collection, seen by Mr. J. Wilson, and is given in the reproduced List by Mr. R. Shearer, with the remark, "Very rare."]

213. Chen albatus (*Cassin*). Cassin's Snow Goose.

Cygnus olor (*Gmel.*). Mute Swan.

[*Not numbered in this List.*] A pair or two (tame) breed on Loch Brora, and there are also others about the Mound and Little Ferry and Loch Shin.

214. Cygnus immutabilis, *Yarr.* Polish Swan.

215. Cygnus musicus, *Bechst.* Whooper.

An occasional winter visitant, a few being seen nearly every

winter. Rarely seen in the west; more frequently in the north.

In Dr. Pococke's time (1760) "a few swans come here (*i.e.* to Loch Shin) every year in the hard weather, and a great number came in the year 1738" (*op. cit.* p. 7).

A regular winter visitant to Caithness, a very favourite resort being the land on each side of the Wick river, when the latter overflows its banks (O. MSS., 1868).

Mr. L. Dunbar includes it as "rare, killed when migrating northwards"; there is a stuffed one, shot at Westfield by Mr. Nichol, gamekeeper. It is now in the possession of Mr. Trail, Castlehill. A flock, "estimated at about sixty, flew south past Wick in 1871" (*Edinburgh Evening Courant* of 18th December 1871).

216. Cygnus bewickii, *Yarr.* Bewick's Swan.

Winter visitant; one shot at Altnaharrow in the winter of 1879; probably of more frequent occurrence than is supposed, not being distinguished from *C. musicus.*

Mr. Wm. Dunbar, in his MSS. List in 1844, includes it as "common in winter in Sutherland," and we are disposed to consider that it is a species of not uncommon occurrence.

Not mentioned by any of the earlier authorities, nor marked as recognised by Mr. W. Reid; but Mr. L. Dunbar has records of four which were shot between 1881 and 1885, and which he stuffed.

217. Tadorna cornuta (*Gmel.*). Sheldrake.

Most frequent during the breeding-season, nesting in the rabbit-holes in the sandhills of the north and east coast.

A few remain during winter at the Little Ferry. Very common on Rabbit Island or Eilean-nan-Ghael, Kyle of Tongue. Rare, or quite absent in the west, so far as we can learn, although several suitable places occur, such as the sandy slope of Handa and the neighbourhood of Loch Sandwood.

Has appeared of late years in the Kyle of Durness, and was seen there both in summer of 1883 and 1884 by Ben. N. Peach of the Geological Survey, and since then had increased to five or six pairs by 1885.

Only recognised as an occasional visitant to Caithness (O. MSS., 1868).

One adult male shot at Keiss Castle by D. Ross, gamekeeper, was preserved by Mr. L. Dunbar, and is now at Welbeck Abbey (Dunbar), and a second specimen is also in the same collection.

218. Tadorna casarca (*L.*). Ruddy Sheldrake.

[Included in Dr. Sinclair's collection. Seen by Wilson in Dr. Sinclair's cabinet with the rest of the collection "obtained by him exclusively in the county of Caithness" (*Voyage*, vol. ii. pp. 178-180).]

219. Anas boschas, *L.* Wild-Duck.

Common, and resident, the only one of the true ducks that is commonly to be met with inland during the winter. Common in the west, and general in summer, often breeding up the hillsides and far away from water.

Caithness name—"*Stock-Duck.*" A very abundant and resident species, living chiefly inland, and only visiting the coast in the winter, during heavy snow-storms, and when they are frozen out elsewhere (O. MSS., 1868).

Observed on the little lochs near Dunnet Head, where they are pretty safe from molestation, owing to the exposed nature of the country around.

220. **Chaulelasmus strepera** (*L.*). **Gadwall.**

[In Dr. Sinclair's collection.]

221. **Spatula clypeata** (*L.*). **Shoveller.**

As regards this duck Sheriff Mackenzie informs us: "Nor have we seen the shoveller duck in the Dornoch Firth, though we have both (referring to Mr. Jennins, who punts in that locality) shot young birds in the neighbourhood in the month of August. It was one of these latter that I got Macleay to preserve for me. This year I am to have a try for the eggs, for I know the loch where they breed" (*in lit.*, March 24, 1884). Mr. Booth, in his Rough Notes, says: "A few pairs and small flocks on shallow waters near Lairg, and an adult male found dead near the base of Ben Armine (*op. cit.*, Part ix.).

[In Dr. Sinclair's collection, but is not mentioned by either Mr. Osborne or Mr. Reid.]

222. **Querquedula crecca** (*L.*). **Teal.**

Common, and resident; like the widgeon, retires to the coast and estuaries almost entirely in the winter.

Tolerably abundant in the west, returning year after year to the same place to breed.

Not so abundant as the wild-duck, but still common and resident, its favourite haunts in this county being the small sheets of water on the hills called "dhulochans" (O. MSS., 1868).

In 1885 we did not see any living teal, but we met with it commonly in collections.

223. **Querquedula circia** (*L.*). **Garganey.**

[Dunbar, in his 1844 MS. to Dr. Gordon, says: "One killed in 1843 in Sutherland."]

224. **Dafila acuta** (*L.*). **Pintail.**

Occurs in winter and spring, more frequent in the latter season; mostly confined to the south-east districts. Has occurred at Tongue, but rarely, and has not often been seen of late years.

Mr. J. M. C. Wallis obtained a nest and eggs of the pintail in 1882, on a loch in Sutherland well known to us, but the down and feathers having been destroyed by moths, the eggs can hardly now be considered perfectly satisfactory, although we did, on a previous examination of the down and feathers, declare them to be undoubted pintail's. This was after we had obtained a genuine nest of eggs of the same species on Haskeir, one of the Hebrides, and had thoroughly identified them by the down and feathers in the nest.

A very rare winter visitant to Caithness. Mr. Osborne is only aware of two occurrences, one at Wester, and the other in the Strath of Stirkoke; this latter was only wing-tipped, and lived in Mr. Osborne's possession for some years (O. MSS., 1868). It was noted as occasional as early as S. and O.'s List (1862).

Mr. L. Dunbar records a third, shot on April 1, 1885, at Achavaasdale by Mr. Lawson—adult male—and now at Mina Villa, Thurso, having been preserved by Mr. L. Dunbar.

Mr. Reid also mentions having observed this species.

225. **Mareca penelope** (*L.*). **Widgeon.**

Common, and resident in the east; most numerous at the Little Ferry and Dornoch Firth in the winter. Breeds abundantly in some parts of the eastern district of the

county, notably about Loch Brora and Loch Naver, more sparingly in other places. Observed at the head of Loch Shin in the summer of 1883, but it is open to doubt if it is found anywhere in the west, or between the mountains and the sea. It is found between Tongue and Loch Eriboll in the north, and thence eastwards. Bred abundantly in 1849 in the centre and east of the county, but Wolley could hear of none in Assynt. Eggs were taken on May 23d near Altnaharrow.

A common species in Caithness in the interior of the county, but Mr. Osborne does not record it as breeding there (O. MSS., 1868).

Mr. L. Dunbar, however, does include it as breeding when speaking of a specimen sent to him to be preserved, and we have little doubt it does so more numerously than is generally supposed.

226. **Fuligula ferina** (*L.*). **Pochard.**

Mr. Crawford tells us he is convinced this duck breeds at several localities in the Tongue district, and he instanced one loch where they are seen all summer. In the east it is a winter visitant only, not uncommon in the Dornoch Firth (Jennins).

A regular winter visitant, frequenting inland waters; almost unknown on the coast (O. MSS., 1868).

227. **Fuligula rufina** (*Pall.*). **Red-crested Pochard.**

228. **Fuligula marila** (*L.*). **Scaup.**

Mr. Selby records a single female shot by Sir W. Jardine in 1834, which was attended by a young bird which escaped. Sir W. Jardine, in a subsequent communication to us, seemed however to have some doubts if this was a young scaup; but we cannot think there was reasonable cause to suppose

it was anything else. Wolley, in 1849, however, searched in vain for it between Loch Eriboll and Loch Hope. We have other strong presumptive evidence of its having bred. In June 1868 Harvie-Brown shot an adult male scaup on a loch in the west, which, from the bird's unwillingness to leave, even when repeatedly fired at, led him to think the female was not far off; and there is other evidence elsewhere detailed (*Proc. Nat. Hist. Soc. Glasg.*, 1875). In the south-east it is not an uncommon winter visitant about the Little Ferry and Dornoch Firth. Rare in the Tongue district.

A common winter visitor to Caithness, appearing in greater or less numbers according to the severity or mildness of the season (O. MSS., 1868).

229. Fuligula cristata (*Leach*). Tufted Duck.

Winter visitant; has been shot in the Dornoch Firth, and occurs in the "Kyle" in severe winters.

A winter visitant, though not numerous. Mr. Osborne is of opinion that a few pairs remain to breed, he having observed two or three old birds on Loch Watten, in the latter end of June, and was also informed of their constant presence there (O. MSS., 1868). Marked also as common in the 1862 List (S. and O.).

Mr. Lewis Dunbar has the note, "Breeds here; but rare." Specimens obtained around Strathmore Lodge, which is far up country amongst the "flows" and "dhulochs."

230. Nyroca ferruginea (*Gm.*). White-eyed Duck.

231. Clangula albeola (*L.*). Buffel-headed Duck.

232. Clangula glaucion (*L.*) Golden-eye.

Sir W. Jardine includes this species as observed on two occasions; one, a male, between Thurso and Tongue, May 17; and on another occasion, from a small loch near Loch

Maddy (or Maedie ?), the party flushed a female on the 21st of the same month. Mr. St. John also observed it on Loch Laoghal in summer. It has been recorded by Mr. Dunbar as breeding near Loch Assynt in the hollow of an old larch-tree, but there are now no larch-trees, to our knowledge, on the shores of Loch Assynt, and we have never met with the species during eighteen years' experience of the west. The golden-eye is a common visitant to the eastern districts, frequenting many of the inland lochs and still pools in the rivers; these are, as a rule, young birds and females, the older males keeping more to the sea; they remain until quite late in the spring.

A regular winter visitant, and much better known than the three or four preceding species (O. MSS., 1868). It is also marked as common in the 1862 List (S. and O.).

234. **Cosmonetta histrionica** (*L.*). **Harlequin Duck.**

[In Dr. Sinclair's collection.

This bird is not credited by Messrs. Newton, Gurney, and Harting as having occurred here.—*Vide* Dalgleish on North American Birds in Europe (*Bull. Nuttall Ornith. Club*, vol. v. 1880, p. 214).]

235. **Harelda glacialis** (*L.*). **Long-tailed Duck.**

A winter visitant, and very abundant along the coast wherever suitable for them.

Common winter visitant, more especially on the east coast, where it is to be found close in to the rocky shores, and in the numerous bays and creeks which intersect it (O. MSS., 1868).

[Mr. W. Dunbar states that it "breeds in this county," and he includes it as a summer visitant. Mr. L. Dunbar does not appear to have received any specimens from Caithness, but numerous specimens from Orkney on April 1, 1884.]

236. Somateria mollissima (*L.*). Eider Duck.

Said by St. John to breed on the islands off the Kyle of Tongue; there are specimens of this bird in the Dunrobin Museum. Breeds in small numbers at Eilean Hoan, at the entrance of Loch Eriboll, and other scattered localities on the north coast. In 1882 Harvie-Brown found broken egg-shells of eider duck upon Eilean Chlaimraig, close to Eilean Hoan, apparently broken by gulls, and the site of a nest of the previous year was pointed out by the fisherman who accompanied him.

Occurs but rarely in Caithness, and Mr. Osborne never saw nor obtained a specimen.

In 1885 we saw eider duck's eggs which had been taken on the Pentland Skerries, where these birds breed every year.

237. Somateria spectabilis (*L.*). King Eider.

238. Somateria stelleri (*Pall.*). Steller's Duck.

239. Œdemia fusca (*L.*). Velvet Scoter.

Winter visitant, haunting the banks at the mouth of the Little Ferry, the Dornoch Firth, and also those towards Golspie. About 1870 they used to be met with opposite Kintradwell, but are rarely seen there now. Perhaps the bank there may have shifted or got too deep for the birds to reach by diving.

A regular but not abundant visitor to Caithness, only appearing in the depth of winter (O. MSS., 1868).

240. Œdemia nigra (*L.*). Black Scoter.

Winter resident, not rare on the south-east coast. Dr. Joass of Golspie informs us that this species bred in Sutherland

in the year 1877, the eggs having been taken, and both old birds shot.

As this species undoubtedly breeds not uncommonly in Caithness, just across the county march, it is fairly to be expected it will also be found in Sutherland if looked for; indeed, we ourselves on two occasions in June 1878 thought we recognised this duck on a loch not far from Balnacoil. Recorded as often seen at Tongue. Not hitherto recorded from the west.

Only an occasional winter visitor to the Caithness coast, and rarer than the preceding species (O. MSS., 1868).

Mr. L. Dunbar records this species as breeding, having taken six eggs and the nest, which are now at Springbank, Thurso, along with the female bird. The nest was found on May 21, 1880 (Dunbar). There are many other records of its breeding in the county, which it is not necessary to enumerate, but its numbers are decidedly limited, and it deserves special protection.

241. Œdemia perspicillata (*L.*). Surf Scoter.

[*Obs.*—"The surf scoter is only an occasional visitor to Caithness, and I have never been fortunate enough to meet with a specimen, or obtain any information regarding its local history" (H. Osborne, in MSS.).]

242. Mergus merganser, *L.* Goosander.

There are two old specimens of this bird in the Dunrobin Museum. We ourselves never observed this bird in the east or west of the county till quite of late years, but Mr. Booth reported to us, *viva voce*, that it bred on the Shin, and it also occurs occasionally on the Dornoch Firth. But as early as 1878 nest and eggs were taken in West Sutherland on 10th May, and the female caught on the nest, and in 1884 they bred again on the same loch-side. The keeper

shot an immature bird, and had it stuffed. Harvie-Brown saw two pairs there in 1885, and again a brood in 1886. It may now be considered established in the west, and it also breeds now on Loch Shin (*auct.* Thomas M'Kenzie): indeed, as early as 1875—May 27th—Mr. J. C. M. Wallis found them breeding there, the birds being very tame, and coming close up to the Lairg Hotel, within the line of boats, which are moored a few yards out. Records of sufficient authenticity also reach us from Stack, and there can be no doubt of the establishment of the species.

It is perfectly idle for critics to say it has all along escaped observation at all these localities, or to deny that it has increased its range enormously in Scotland since the authors' experience of the county.

"It may also be ranked among the winter visitors to Caithness, but the adult male seems to be very rarely obtained" (H. Osborne, in MSS.).

Has been observed in the county by Mr. Reid, and Mr. L. Dunbar records an adult male goosander shot at Brawl Castle on 29th January 1878 by Mr. Bignold, preserved by Mr. Dunbar, and now in London; and an adult male and female, also shot at Brawl Castle by J. Sutherland, keeper, which is now at Springbank, Thurso (Dunbar): to these may be added, amongst actual positive records, one at Welbeck Abbey.

243. **Mergus serrator**, *L.* **Red-breasted Merganser.**

Resident, and common; breeding throughout the whole of the interior of the eastern district; only met with on the coast in winter in the east, but abundant in the west, breeding both on fresh and sea water lochs. Generally distributed.

"It is described as being a rare Caithness species, but it is exceedingly probable that more careful and intelligent

observation would prove its claim to rank as a regular winter visitant, if not permanent resident" (H. Osborne, in MSS.).

Mr. Dunbar records its occurrence at Freswick on September 11th, when one—an adult male—was shot by Mr. J. Wormald, and Mr. L. Dunbar marks it as both a winter and summer visitant. There are two specimens in Welbeck Abbey. The nest has been taken at a small loch near Keiss, in the parish of Wick, by Sergeant Sandison, and Mr. Reid has had young flappers sent him caught in the neighbourhood. It is interesting, with regard to this species, to compare the distribution in east and west, and in Orkney and Shetland.

244. **Mergus cucullatus**, *L.* **Hooded Merganser.**

[A specimen in Dr. Sinclair's List, marked "very rare."]

245. **Mergus albellus**, *L.* **Smew.**

[An extremely rare visitant to the county (O. MSS., 1868). Mentioned in Dr. Sinclair's List, but not as being in the collection.]

Series SCHIZOGNATHÆ.

Order 1. COLUMBÆ.

Family COLUMBIDÆ.

246. **Columba palumbus**, *L.* **Ring-Dove.**

Resident in the eastern district, and very common in the wooded and cultivated parts of the south-east. A number of these birds spread up the straths, and into any isolated patches of wood during the breeding season, retiring coastwards on the approach of winter. In Assynt, in 1869, one pair were observed at Inchnadamph, which remained for a few days,

but did not tarry longer. In 1877 we find the note, "Not uncommon in the young plantations around Loch Inver." In 1883 they were seen commonly. Previous to 1869 they appear to have been unknown in the west. As early as 1834 Selby observed it at the base of Ben Loyal, near Tongue; but he adds—"A few pairs only were seen during our excursion." Seen at Altnaharrow in June 1881.

Resident, and common in suitable localities, breeding in most of the plantations along the east coast (O. MSS., 1868).

Mr. L. Dunbar observes that it is not common in the county, probably referring to the Thurso district, where want of trees would account for that.

247. **Columba livia**, *Bonnat.* **Rock-Dove.**

"At this time (1884) the rock-dove is nearly, if not quite, extinct in the east of Sutherland; eight or nine years ago they could be seen from morning until evening going to and fro from their breeding-places in the rocks on the Caithness side of the Ord, in flocks of thirty and forty, all the year through; now it is a rare thing to see one. The last I remember seeing was a small flock of about half a dozen flying over Helmsdale about three months ago. They are by no means a hardy bird, and I attribute their scarcity entirely to the several severe winters we have had since 1876. They have been seen to fall dead in the air when flying during protracted severe weather. I have often caught them in the Navidale stackyards unable to walk or fly, nothing but bones" (J. Hill, Esq., *in lit.*). But it is reasonable to suppose that an increase has again taken place, as they were extremely abundant along the better cultivated belt of the sister county to the north in 1885. Generally distributed on the north coast, more local in the west, preferring the mainland caves, as a rule, to those

on islands. Fairly common at Stoir Head, but nowhere to be called abundant. A pair of apparently perfectly pure wild rock-pigeons frequented the inn at Inchnadamph in May and June 1877, associating with the house-pigeons; they had not returned up to 1886.

Fleming mentions, on the occasion of a visit paid by him to the Smoo Cave, near Durness, that, "upon entering the cave, numerous wild-pigeons, water-ouzels, and common sandpipers (*Totanus hypoleucos*) hastily escaped" ("Gleanings of Natural History gathered on the Coast of Scotland in 1821," *Wernerian Nat. Hist. Soc.*, 14th December 1822); but no such congregation was witnessed by us in June 1882 when on a visit to the caves.

Resident, and very abundant along the cliffs and caves of the Caithness coast (O. MSS.).

Rock-doves suffered greatly from the late severe winters, but are again extremely abundant all round the coast. Flocks of scores frequent the fissures through all the ramifications of the Devil's Bridge chasm near Holborn Head, the clap of their wings being often heard as they fly out without the birds themselves being visible. Perhaps nowhere in Scotland are they more plentiful than on the Caithness coasts. Excellent sport can be had, and we have heard of as many as thirty couple having been shot in a day, but it requires an experienced eye and practised hand to kill them.

248. Columba oenas, *L.* Stock-Dove.[1]

[Has a place on the Caithness List, and Mr. Reid also mentions it as occurring in the county, but no dates are given.]

[1] The stock-dove has certainly extended its range marvellously rapidly of late years, and in 1885 had reached the south coast of the Moray Firth at Lossiemouth and Culbin Sands. It will be interesting to observe its further progression, should any such take place.

249. Turtur communis, *Selby.* Turtle-Dove.

Very rare summer visitant. Two specimens in Dunrobin Museum are labelled "Kirkton, July 1854"; "Crakaig, Sep. 1879" (*auct.* Rev. Dr. J. M. Joass). Mr. J. Crawford, writing us in 1879, says: "On inquiry I find that several turtle-doves had been shot in the Melvich district some three years ago. I do not remember having seen any here (Tongue) previous to the one I sent you." This bird was shot, but much lacerated, by a pea-rifle bullet, so much so that we could not preserve it.

Two or three specimens of the turtle-dove have been obtained in the county, the last being a young bird shot by Mr. Dunbar of Brawl, on August 23d, 1867, on the roadside near Canisbay House, and within a mile of John o' Groat's House. It was a young bird of the year (O. MSS., 1868).

Marked as occurring also by Mr. Reid.

250. Ectopistes migratorius (*L.*). Passenger Pigeon.

Family PTEROCLIDÆ.

251. Syrrhaptes paradoxus (*Pall.*). Pallas Sand Grouse.

Extremely rare, accidental visitant. A specimen in the County Museum was taken at Dornoch on June 6, 1863.

Two examples of this sand grouse were obtained in Caithness, and ten or twelve others observed in the year 1863. The first specimen was shot at Westerseat on the 8th of June, and the second a few weeks after, a few miles south of Wick, by F. Bentley Innes, Esq., of Thrumster.[1]

[1] *Vide* Newton, "Ibis," and *Encyclopædia Britannica*, under "Sand Grouse."

Order 2. GALLINÆ.

Family PHASIANIDÆ.

252. **Phasianus colchicus**, *L.* Pheasant.

Resident, but only numerous where hand-reared and preserved. Pheasants were introduced as long ago as 1841 at Skibo (*New Stat. Acct.*), where they are numerous at present. Introductions have taken place also at Kildonan in the Helmsdale Strath, and a few are seen occasionally near Loch Brora. In Assynt Mr. Whitbread introduced them in 1869, and they promised well for some time. Since then, however, they have practically become extinct, an old bachelor cock living on till 1882. Pheasants have also been introduced at Tongue quite lately. It remains to be seen how they will succeed.

Abundant at Berriedale and Langwell, and recorded by Mr. Osborne as being preserved at Stirkoke, Latheronwheel, Clyth, etc. (O. MSS., 1868).

253. **Caccabis rufa** (*L.*). Red-legged Partridge.

254. **Caccabis petrosa** (*Gm.*). Barbary Partridge.

255. **Perdix cinerea**, *Lath.* Partridge.

Resident; fairly abundant in the cultivated districts of the south-east, and occurs here and there further inland, where the shepherds have a little more reclaimed land than is usually the case. A covey is occasionally seen at Badenloch, but they are not regular visitants there. The outlying coveys draw down to the coast in severe weather.

Common about Rosehall and Lairg. Seen at Tongue by Sir W. Milner, and fairly common to the north of Loch Inver. A pair were seen in 1834, at Inchnadamph, by Mr. Selby's party; at this place, where there are only some

10 or 15 acres under cultivation, two pairs were seen in 1869, and, in the autumn of that year, Mr Hardcastle killed 16 brace. About the year 1877 there was only one pair in the district, and even these birds were not seen every year. From Tongue Mr. Crawford writes us, under date March 17, 1884: "Partridges are extinct (at Tongue) since the severe winter of 1879; I have only seen one solitary bird since then."

But in 1886 Mr. Savile G. Reid marks them as local in the north-east of Sutherland, and gives Ribigail and Betty-hill as localities for a few coveys. This only shows how climatic changes promptly have effect upon bird-life locally, and is an argument in favour of a more extensive appreciation, and a wider application, by naturalists, of the same natural law of causes and effects. We again uphold our fixed opinion that such fluctuations are distinctly deserving of special attention, and that the causes are in many cases distinctly subject to detection.

Fairly plentiful through all the cultivated districts of the county (O. MSS., 1868).

256. **Coturnix communis** (*Bonnaterre*). **Quail.**

Has occurred on the east coast on several occasions between Brora and Dornoch. A deserted nest was obtained by Sheriff Mackenzie in September 1873; there are also specimens in the Dunrobin Museum. As early as 1830 the quail is noted as occurring, being included in a list of birds given in *A Tour through Scotland*, p. 151, as seen there in the then keeper's house at Dunrobin. Several nests have been found about the same district.

Mr. Osborne mentions a pair of these birds which bred on the farm of Ulbster, near Wick, in 1860, twelve eggs having been laid and hatched. Two young birds and the old cock

were shot by Mr. Shearer, and several other young ones were caught by hand (O. MSS., 1868).

257. Ortyx virginianus (*L.*). Virginian Colin.

Family **TETRAONIDÆ.**

258. Lagopus mutus, *Leach.* Ptarmigan.

Resident; much scarcer than formerly in the east. Has disappeared from all the hills it used to inhabit on the Caithness march; also from the Bens Griam and Ben Uarie, within the last forty or fifty years, from the last-named place last of all; getting much scarcer, too, on Ben Armine, and even on Ben Clibrick. During the severe winter of 1880-81 three ptarmigan were seen not far from Ben Horn in the Dunrobin forest. We have the note of a nest of ptarmigan's eggs, taken on Ben Clibrick on 23d May 1849 by Mr. Hancock. [We consider it always desirable to fix a date, although of course ptarmigan are still not uncommon on Ben Clibrick.] It is difficult to understand why this species should be so steadily on the decrease in many localities in Scotland, and has actually become extinct in others.

Abundant in the west, and all the high mountains, but more so on the continuous ranges than on the isolated hills. The range of Glasbhein, Ben Uidhe, Ben Harran (Chaoran), Ben More, and Braebeg, is perhaps the best ptarmigan range in the county.

Writing in 1867, Mr. Osborne observes that the "white grouse" is not an uncommon species on the hills which form the southern boundary of the county, the Scarabhen, Morven, etc. (O. MSS., 1868).

Mr. L. Dunbar marks it as not numerous on Morven, there being only a few pairs; he has preserved several from that district. It is included in the collection at Welbeck Abbey.

259. **Lagopus scoticus** (*Lath.*). **Red Grouse.**

Resident; some years more abundant than others; most abundant in the season of 1880, since which time the county has never entirely been free from disease, though this scourge has not been equally destructive in all places. Grouse migrate much in this county; many birds were seen at the beginning of 1883 on the east coast, yet few remained to breed, and scarcely any were to be found in the shooting season, nor was any sign of dead birds found; in the west of the county, however, good sport has been had for several years back, in places where formerly scarcely a grouse was to be seen, and the conclusion is that the birds migrated there from the east.[1]

The fluctuations in numbers from year to year to which grouse are now subject, opens up a large question for full treatment (which we have not room for here), owing to many causes which, we believe, are quite within the grasp of the naturalist to understand. Common in West Sutherland at certain localities, especially above the limestone, where in Assynt 700 and 600 brace were killed in two seasons respectively. Tape-worm in 1874, and late cold spring with frost and much cold rain, almost brought them to the verge of extinction in 1876 and 1877, and we did not see a single bird along all the thirty-five miles of road between Lairg and Inchnadamph, where they used to be fairly abundant. They partly recovered in 1878.

Rare in Stoir and Aardvaar, owing to the superabundance of old rank heather and irrepressible hoodie crows. Grouse do not "pack" in the west of Sutherland. Mr. Savile G. Reid notes it as very scarce on the flowlands and moors above Bettyhill, and in the north-east of Sutherland, in 1886.

---

[1] With reference to the above, it may be noted here that a pack of grouse was seen flying south over the Moray Firth, and making for the Banff coast, in December 1879 (J. A. H.-B.).

The red grouse is a very abundant species in Caithness. Mr. Osborne's father kept a number of these birds in confinement for several years, and on one occasion a pair bred and hatched out five healthy chicks (O. MSS., 1868).[1]

260. Tetrao tetrix, *L.* Black Grouse.

Resident and numerous, being found scattered through the eastern districts, irrespective of wood or cover, but is more restricted in the west, and confined to birch coverts and the lake and river sides, being seldom seen on open ground.

A trustworthy informant tells us a curious story with respect to black-game in the Helmsdale Strath. A very old man, named William Gordon, who lived in the Strath, and who died when William Armstrong (the informant alluded to) was a "youngster," told him that the first black-game ever seen there came from Berriedale in Caithness, where they had been introduced by one of the Sinclairs. They were first seen on the top of the hill overlooking the Strath, but finding it apparently very much to their liking, they came down, and soon became very numerous there.

A shepherd near Syre, in Strathnaver, told Mr. Akroyd, the lessee of the Altnaharrow shootings, that black-game had only been in that part of the country some fifty or sixty years. This would be fifty or sixty years previous to 1870. Mr. Akroyd told us this himself.

Black-game are dying out in parts of Sutherland. There are none to be found now at Kintradwell, where they were once quite numerous; the same at Morvich, near Golspie; and we hear the same complaints from many other places in the north and east of the county. They are still, however, fairly numerous about Rosehall and neighbourhood. This, taken in connection with our note about their being

[1] Mr. Osborne, senior, was always fond of nature, and took interest in his son's ornithological career. Mr. Osborne used to walk many miles from Wick to fetch the tender heather shoots for the old and young grouse, which had hatched out within his walls in the town (W. Reid, *in lit.*).

probably an introduced species, that extended their range from Caithness, where they were first introduced, is a curious circumstance.

More abundant probably about Berriedale than on the bleak open moors of the north, east, and centre of the county, though a few occur everywhere where suitable situations are to be found (O. MSS., 1868).

Mr. Dunbar includes several preserved by him from Shurrery, Thurso, and Barrogill Castle, between 1878 and 1880.

261. **Tetrao urogallus,** *L.* **Capercaillie.**

[Extinct in the county, though it was present in Sir Robert Gordon's time. Attempts at reintroduction have been made by Mr. Chirnside in 1870, at Skibo (vide *The Capercaillie in Scotland*, D. Douglas, Edinburgh, p. 99), and at Ospisdale. One bird survived at Skibo for two years, but finally disappeared. There being 1800 acres or more of suitable wood on the property, we cannot but believe that an attempt on a sufficiently large scale would succeed, if it is considered a desirable addition to the game of the district.]

Family **TURNICIDÆ.**

262. Turnix sylvatica (*Desf.*). Andalusian Hemipode.

Order 3. GRALLÆ.

Family **RALLIDÆ.**

263. Rallus aquaticus, *L.* Water-Rail.

Winter visitant of not rare occurrence in suitable localities on the east coast.

Included as a breeding species by Mr. A. G. More in Sub-province 35. We have no further corroborative notes,

but the birds have been seen by Mr. Booth at Lairg and Altnaharra (Rough Notes, Part ix.).

Not an uncommon bird in Caithness, and probably commoner than it appears, as it is not easily found without a good dog (O. MSS., 1868).

Has also been observed by Mr. W. Reid, and we heard of it from others; Mr. Dunbar also notes it as being met with every year.

264. **Porzana maruetta** (*Leach*). **Spotted Crake.**

Mr. Osborne mentions this as a rare visitant to Caithness (O. MSS., 1868).

265. **Crex bailloni** (*Vieill.*). **Baillon's Crake.**

Dunbar has a note in MS.: "Shot near Loch Cracle, Sutherland, in 1844."[1]

[In Dr. Sinclair's collection, and seen by Mr. Wilson there. Also in Mr. R. Shearer's List.] There is certainly one Baillon's crake at present in Dr. Sinclair's collection at Thurso, and another at Brawl Castle. These were seen by Harvie-Brown in 1885, but no information was forthcoming.

266. **Porzana parva** (*Scop.*). **Little Crake.**

267. **Crex pratensis**, *Bechstein*. **Corn-Crake.**

Summer visitant; very abundant in the east, being found in every locality where there is any extent of cultivation, and even occasionally out on the barren moor, but the latter rarely. Rare in the west, but a pair or two in most cultivated areas of sufficient size.

A summer visitor, found in abundance through all the cultivated parts of the county (O. MSS., 1868).

[1] Loch Cracle or Cragail is about four miles N.E. of Inveran.

Very common ; breeds annually on Pentland Skerries, in one of the lighthouse gardens. We took an egg from a nest containing four rotten eggs, some young having been hatched off from the same nest, and a few days after we were there, the men found another nest with seven eggs.

268. **Gallinula chloropus** (*L.*). **Water-Hen.**

Resident and local ; mostly confined to the south-east, where in one place they are very abundant ; we have received eggs from a locality in the north-east, and also seen a bird on a hill-loch at a considerable distance from its usual habitats. It is found breeding on a loch not far from Lairg.

There is only one locality known to us in the west, where one pair of birds bred regularly for a number of years. Common at Tongue.

Common in the county in suitable localities. Mr. Osborne had water-hens caught in the neighbourhood of Stirkoke, which, after two or three days' captivity, became tame enough to mix with the poultry (O. MSS., 1868). We ourselves have eggs taken near Thurso in 1869.

269. **Fulica atra**, *L.* **Coot.**

Scarce ; we have observed this species on Loch Bad-an-eontigh, in the parish of Rogart, and Mr. Crawford of Tongue informs us that he formerly (previous to 1877) observed this species on a small lochan in the parish of Farr, where it bred, but for some years back it had not reappeared there ; we have observed it in one or two other lochs in the east of the county. Has been shot singly at Tongue ; apparently came in from seaward on two occasions. The coot also breeds on the artificial lake at Rosehall. Not hitherto recorded from the west.

A summer visitant to Caithness, its numbers being almost equal to those of the water-hen ; like that bird, too, it soon becomes tame in confinement (O. MSS., 1868).

Family **GRUIDÆ**.

270. Grus communis, *Bechst.* Common Crane.

271. Grus virgo (*L.*). Demoiselle Crane.

Order 4. LIMICOLÆ.

Family **OTIDÆ**.

272. Otis tarda, *L.* Great Bustard.

273. Otis tetrax, *L.* Little Bustard.

The fullest and most authentic account of the capture of a bird of this species in Caithness is as follows :—Mr. John Wolley when in Wick, a year or two after 1848, was shown the bird by Dr. Sinclair, in the month of July or August. On the 8th of March 1853 Mr. Wolley wrote to Dr. Sinclair to ask him what he could recollect concerning the capture of the bird, to which Dr. Sinclair replied; and we give his reply *in extenso,* quoted, along with all other information on the subject, from the *Egg-Books* of Mr. John Wolley, by the kind permission of Professor Newton. The letter is dated Wick, March 28, 1853, and proceeds as follows :—

"I have made every inquiry about the Little Bustard, but have been completely foiled in all my inquiries—cannot learn any one thing of her. I shall tell you how she came into my possession. One day in the middle of June 1848 or 1849, I went in to the bar of the Caledonian Hotel here. Well, to my great delight and surprise, I found this rare and beautiful bird laid with some dead domestic fowls. I took it up, and walked home with it, and sent my friend, Mr. Leith, three hens for it, which he thought was a good exchange. On my further inquiry, I found that she had been shot by a 'poacher' in the parish of Halkirk, sixteen miles from this, and five miles from Thurso, or other-

wise almost in the middle of the county; and that part of the country being very flat and swampy, with a good river running through it, I have not the least doubt but she had a nest. There is a man in that district who collects birds' eggs, and sends them south every year to particular houses, from which he gets good prices."—E. T. SINCLAIR.

So much then for the authenticity of the capture of the bird. But there is tagged on to this an even more interesting tale. In the collection of eggs formerly belonging to Mr. Wolley, and now incorporated with Professor Newton's collection at Cambridge, is an undoubted egg of the little bustard; and whether we establish the breeding of the species in a solitary instance in Caithness or not, the following particulars of its history can scarcely fail to be of interest. We quote again from Mr. Wolley's *Egg-Books*, v. p. 732. *Little Bustard.*—"This egg I obtained in the year 1848 from Mr. Cramond, the dancing-master at Thurso. He let me take any of his eggs I chose, as he did not value them. He had few eggs—all taken either in the neighbourhood or in Orkney, and there were none amongst them of which this could be thought a variety. I saw how like it was to a little bustard's, but I thought no more of it for a long time afterwards, having made up my mind without much consideration that it must be a variety of the common gull or whimbrel. It was not till a year or two afterwards that I began to think it might really be a little bustard's, and only the present year—1853—that, in consequence of Mr. Salmon and several other good judges of eggs pronouncing it to be a little bustard's, that I determined to write to Dr. Sinclair of Wick."

Mr. Wolley then wrote Dr. Sinclair, and received the reply which we have quoted above. Mr. Wolley says in his MS.: "In my first letter last month to Dr. Sinclair, I carefully avoided all allusion to my egg," but he asked him to see the man who shot the bird, and, amongst other questions relative to the nature of the ground, and how she

rose previous to being shot, etc., asked if "there was any reason to suppose there was a male bird or a nest." Hence, probably, Dr. Sinclair's reference to nesting in his letter. Later, Mr. Wolley wrote again to Dr. Sinclair, saying, "I am extremely anxious to hear more about it, for I have reasons for thinking it may have bred in the county," and suggesting an advertisement in the local papers, asking a number of questions, none of which, however, were leading ones, as regards the egg in his possession. Some time in March, Mr. Wolley received a *John o' Groat's Journal* with the advertisement, "Rare Bird killed in Halkirk Parish," dated "Wick, Feb. 29, 1856." No response appears ever to have been made to the above advertisement, and so the matter now remains. Harvie-Brown saw the egg in the broken state in which Wolley states he received it, and afterwards mended it, when he was "distinctly given to understand that it was taken in Caithness, but with no further particulars, for which, unfortunately, I did not press. I mended it some time ago." There cannot remain a single doubt but that it is a *bona fide* egg of the little bustard, but beyond this and the facts given above we cannot affirm.

274. Otis macqueeni, *J. E. Gray.* Macqueen's Bustard.

Family **ŒDICNEMIDÆ.**

275. Œdicnemus scolopax (*Gm.*). Stone Curlew.

Family **GLAREOLIDÆ.**

276. Glareola pratincola, *L.* Pratincole.

Family **CHARADRIIDÆ.**

277. Cursorius gallicus (*Gm.*). Cream-coloured Courser.

278. Eudromias morinellus (*L.*). Dotterel.

There is nothing to add to what has been said by St. John about the dotterel in his time. Ben Clibrick is the only

place in the county known to us as having been visited by this bird; it has, however, been observed there both by Mr. Crawford of the Lairg Hotel, since deceased, and also by Donald Gillies, for a long time a keeper with Mr. Akroyd at Altnaharrow. A specimen in the Dunrobin Museum was obtained on Ben Clibrick on 18th June 1846.

Mr. Osborne says that some half-dozen specimens of this bird have been obtained in Caithness, and records the capture of a pair in April 1867 (O. MSS., 1868).

In 1872 Harting, quoting M'Gillivray, includes Sutherland and Caithness as being among the localities where the dotterel is believed to breed, but we cannot find that M'Gillivray includes these counties in his list (*History of British Birds*, vol. iv. pp. 104-113).

279. **Charadrius pluvialis**, *L.* **Golden Plover.**

Resident and abundant, but rarer and much more local in winter. Breeds through all the moorland district, being commoner in the wetter and more desolate parts. Numbers of these birds are often to be seen in a flock on the green ground high up along the river-sides in May and early in June, probably non-breeding birds. Common in the west, especially above the limestone cliffs, on the moor stretching back towards Loch Mulach-Corry. Common between Durness and Cape Wrath.

Common and resident in Caithness, breeding on the moors, and coming down to the cultivated districts in autumn in immense flocks, where they mostly frequent fallows, pastures, and grass parks. Mr. Osborne says this species is very liable to "frost-bite," and he once examined a number that had been shot in a park at Clyth, most of which were disabled from this cause; some had lost a toe, others most of the foot (O. MSS., 1868).

Abundant in all suitable localities; approaching nearest

the coast in the breeding season at the north-east angle of the county, so far as we could judge.

280. Squatarola helvetica (*L.*). Grey Plover.

Rare visitant. Said by Sheriff Mackenzie to occur at intervals along the Dornoch Firth. The only specimen seen by ourselves, and the only one in the Dunrobin Museum, was shot at Kintradwell, among some stones on the shore, on January 20, 1871,—a solitary bird.

It may be worthy to remark here that Mr. Macleay of Inverness, in all his long bird-stuffing experience, has never received but this one specimen to set up.[1]

281. Ægialitis cantiana (*Lath.*). Kentish Plover.

282. Ægialitis curonica (*Gm.*). Little Ringed Plover.

[*Obs.*—Both the ringed plover (*C. hiaticula*, L.) and the little ringed plover (*C. curonica*) are included in the List of the Welbeck Abbey collection, there being, however, only one of the latter.]

283. Ægialitis hiaticula (*L.*). Ringed Plover.

Resident, and abundant all along the east coast, and also breeds inland in one or two situations, notably on the shores of the chain of lochs at Badenloch. Rarer in the west, but common on the stony waste of land to the south-east of Durness, where the crofters cut their peats, near Loch Maidagh or Maeddie, and on the bed of a drained-out loch.

A common and resident species all round the coast. Mr. Osborne mentions it as breeding commonly in fallows and newly sown oat-fields, laying its eggs on those parts of the field where the grain has failed to grow, and in similar situations in turnip-fields (O. MSS., 1868).

[1] Our observations of migration tend to show that in spring, Grey Plovers shoot off our coasts at Spurn Point in Yorkshire. In autumn they are regular visitors to the estuary of the Forth at Grangemouth, and also to that of the Tay.

Observed very commonly on the Holborn uplands, on the stony moor where the wind has cut away the turf on the ridges. Also all along the north coast where suitable ground occurs ; distinctly rarer on cliff-tops elsewhere than at Holborn Head, at which locality alone in similar situations the ground is eminently suited to their nesting habits.

284. **Vanellus vulgaris**, *Bechst.* **Lapwing.**

Resident, and abundant ; though much scarcer in winter than at other times. These birds ascend all the straths where they can find suitable places to build, even going quite into the centre of the county; the great bulk depart further south after the breeding season. More local in the west, but abundant in one or two localities, and occasionally ground not before frequented is taken up by a few pairs, as, for instance, on the flat meadows along the course of the river Loanan, near Inchnadamph, of late years.

This is an abundant species in the county during the spring and summer, and in mild seasons a few stragglers remain throughout the year ; the great bulk of the native-bred birds leave in the autumn for the south. Owing to the spread of cultivation the lapwing is not nearly as common as formerly, especially in the parish of Wick, and in the vicinity of the coast villages (O. MSS., 1868).

Observed abundantly in 1885.

285. **Strepsilas interpres** (*L.*). **Turnstone.**

Common the whole year round the coast, excepting during the breeding season, from the middle of May to the middle or end of July, when it is much scarcer, although stray individuals occur even then.

Mr. Osborne considers this a very rare species on the Caithness coast, having seen only one or two, and these in Wick Bay (O. MSS., 1868).

Of one obtained at Thurso Castle, shot by Mr. Lewis Dunbar's brother[1] on December 13th, 1878, and now at Springbank, Thurso, Mr. L. Dunbar has the note—"Last bird my brother shot," and the note, "Plentiful in winter."

Specimens are in Welbeck Abbey collection, shot in the south-east of the county.

From all we could learn the bird is far from being so rare as Mr. Osborne supposed, but we suspect they are commoner on the north coast than on the east.

286. Hœmatopus ostralegus, *L.* Oyster-catcher.

Resident, and common; receiving large additions in the winter, at which season the mussel-scalps at the Little Ferry are at times covered with these birds. Occasionally seen inland on fresh-water lochs in the west. Common on all the shore-line and islands of the salt-water lochs. Appears, but not very regularly, on Loch Shin, though, in 1885, it occurred at both ends of the loch.

Common, and resident, breeding along the coast in all suitable localities (O. MSS., 1868).

In 1885, the oyster-catcher was not observed at all abundantly on the north coast, where the whole cliff is too high and precipitous, but it was abundant on Pentland Skerries and Stroma, and also on the coast at Mey and Huna. A pair frequented a small shingly fresh-water loch on Dunnet peninsula. It is apparently not very abundant on the east coast.

Family **SCOLOPACIDÆ.**

287. Recurvirostra avocetta, *L.* Avocet.

[1] Mr. William Dunbar, long lessee of Brawl Castle, and the river Thurso and shootings in Caithness.

288. Himantopus candidus, *Bonnat.* Black-winged Stilt.

289. Phalaropus hyperboreus (*L.*). Red-necked Phalarope.

St. John's record is the only one we can find of this bird as a Sutherland species: a pair were seen by him at Altnaharrow, at the head of Loch Naver, on June 10, 1848: but Dunbar has the note in his 1844 MSS. to Dr. Gordon, "seen near Bonar Bridge," while Mr. Booth, in his Rough Notes (Part x. article "Grouse"), speaks of it as "occurring at Loch Craggie, a mile north of Loch Shin,"—a statement sufficiently vague, as we are not aware of any loch of that name a mile north of Loch Shin.

290. Phalaropus fulicarius (*L.*) Grey Phalarope.

Very rare winter visitant. The only specimen known to us, and now in the County Museum, was shot at a pool of water on the Kintradwell Links by Mr. Houston on December 3, 1869. Dunbar has a vague note in his 1844 MSS. to Dr. Gordon: "Seen near the river Carron, Sutherlandshire" (*sic*).

Two examples of this species were obtained near Wick in October 1863, the first by Mr. John Tudor, and the second by Mr. W. Peach (Mr. Osborne, in MSS., 1868).

291. Scolopax rusticola, *L.* Woodcock.

Resident, and common; as a breeding species has much increased of late years; rare in the central and north-east districts. Woodcocks seem to be least common about August and September; after the young can fly well, possibly they go south, thus accounting for "early arrivals" there. The numbers of those shot on the east coast varies with the season, as, unless driven in by frost, or, still more, deep snow, woodcocks remain on the hills.

Common in the birch-woods of Assynt in summer, and flights occur in winter. Breeds regularly also around Tongue.

A common winter migrant; not known as breeding in the north and east of the county, probably from the scarcity of suitable localities (O. MSS., 1868). Breeds at Berriedale (1885).

292. Gallinago major (*Gmel.*). Great Snipe.

Mr. L. Dunbar records one, an adult female, killed by Mr. J. Wormald at Freswick, preserved by him, and now in Brawl Castle. He has the note, "Very rarely met with."

293. Gallinago cœlestis (*Frenzel*). Common Snipe.

Resident, common, and generally distributed; more abundant in the lowlands in the winter, as the snipes then leave the higher grounds. Much scarcer since the two late severe winters, and even before then these birds were getting much rarer in the central districts during the summer and autumn.

Common; but less so of late years in the west.

Resident, and still abundant, though, from all accounts, not so plentiful as forty or fifty years ago (O. MSS.).

Mr. L. Dunbar records an albino of this species shot at Freswick in 1878, and now in his possession. We met with the snipe only sparingly on the north coast.

294. Gallinago gallinula (*L.*). Jack Snipe.

Autumn visitant, scarcer in winter. Much as has been said of the breeding of this species in Scotland, there is no

evidence of sufficient reliability to prove this, either in this county or elsewhere in Scotland.

Mr. Osborne calls this an indigenous species, a few remaining to breed in the extensive bogs and moorland wastes; but as he gives no instance of ever finding its nest, this seems to be merely propagating an old error, and it is more likely to be only an autumn migrant, a few remaining through the winter. Mr. L. Dunbar has the note, "A few killed every winter."

295. **Limicola platyryncha** (*Temm.*). **Broad-billed Sandpiper.**

296. **Tringa maculata,** *Vieill.* **Pectoral Sandpiper.**

297. **Tringa fuscicollis,** *Vieill.* **Bonaparte's Sandpiper.**

298. **Tringa alpina,** *L.* **Dunlin.**

Resident; most numerous in the breeding season, rarer in the winter. The dunlin is sparsely scattered all through the moorland districts in the breeding season, being most numerous in the wet flowlands of the centre, but nowhere very abundant. From its unobtrusive habits and extreme tameness it does not *appear* to be as common as it is. The only place we have observed it in winter is on the large mud-flats on the north-east side of the Little Ferry, and Sheriff Mackenzie records it as common on the Dornoch Firth, near which it breeds in one locality. An annual breeder also at Lairg, and on the flows westward to Loch Shin, above Oykel Bridge, and at Loch Urigill, where it has greatly increased of late years up to date of 1886, and again near Loch Inver at one locality. Very common near Cape Wrath and Tongue.

Wolley shot dunlins "by Loch Assynt; not breeding just there, as they were in small flocks in May" (Woll.

E.-B., iii. p. 294). Dunlins are not often seen at Loch Assynt, and we cannot recall more than one or two instances of noticing them in nearly twenty years' experience of the locality. A few breed, however, near the west end of Loch Assynt, or about three miles down the river Inver, on a piece of flat moss or flow.

Caithness name—"*Plovers page.*" An indigenous species, breeding abundantly in all suitable localities on the moors, such as flows, bogs, etc. A few occur at the mouth of the Wick river even in very severe weather (O. MSS., 1868).

Observed in 1885, commonly near Holborn Head, by the sides of shallow lochs, in the depressions between the wind-swept ridges already described. Also very common, and exceedingly tame, on the Pentland Skerries, where they breed. Common all over the interior of the county, on the "flow" ground.

299. Tringa minuta, *Leisl.* Little Stint.

Two specimens are included by Mr. J. Whitaker in his MS. List of the birds at Welbeck Abbey as shot on the Duke of Portland's Caithness estates, but, as usual in this collection, no dates or precise particulars are given. Mr. Reid mentions one as having been shot at Wick on October 7th, 1874, and now in the collection of Mr. Eric M'Kay, nor does he seem to consider them as very rare.

300. Tringa temminckii, *Leisl.* Temminck's Stint.

[In the collection of Dr. Sinclair (?), and in the reproduced List of Mr. R. I. Shearer.]

301. Tringa minutilla, *Vieill.* American Stint.

302. **Tringa subarquata** (*Güld.*). **Curlew Sandpiper.**

[In Dr. Sinclair's collection, and in the reproduced List of Mr. R. I. Shearer.]

303. **Tringa striata**, *L.* **Purple Sandpiper.**

Winter visitant; abundant along the coast wherever there are rocks and stones suitable for it; rarer on the sandy shores. We have noted this species as late as the 26th May 1868 on the Badcall Islands, and it is frequently seen late in spring and beginning of summer on the shores and islands of the west coast.

A common winter visitant to the shores of Caithness, which, being so rocky, are very suitable to its habits. It usually arrives about the 1st of October, and departs the end of March or beginning of April, though in backward seasons it remains as late as May Day, Mr. Osborne having observed about a dozen in Wick Bay on that date in 1861 (O. MSS., 1868). There are several specimens in the Welbeck Abbey collection.

304. **Tringa canutus**, *L.* **Knot.**

Mr. Mackenzie reports this bird as common at the Dornoch Firth; we ourselves once saw a large flock of waders at the Little Ferry, which we thought referable to this species; none, however, were procured.

Mr. Osborne records this species as a very rare visitant to Caithness (O. MSS.).

Recorded as seen by Mr. Reid; and Mr. Gray, in his *Birds of the West of Scotland*, says: "On the east coast the knot is usually found in small flocks on all the shores extending from Berwickshire to Caithness."

305. **Machetes pugnax** (*L.*). **Ruff.**

Dunbar, in his MS. List of 1844 sent to Dr. Gordon, includes one killed at Scourie in May 1844.

Obs.—There are specimens of ruffs (*Machetes pugnax*) in full breeding plumage in the Dunrobin Museum, but there is not sufficient evidence of their having been obtained in the county to include them in our list; they are not recorded by Sheriff Mackenzie from the Dornoch Firth. A ruff in Dunrobin Museum came there from the old collection at the kennels, but this is all the information regarding it.

Not recorded by the earlier authorities for Caithness.

Mr. L. Dunbar has the record of one shot, 16th September 1884, at Achavarasdale by Sir R. G. Sinclair, Bart.—an adult female—now at Achavarasdale Lodge. Mr. William Reid records an earlier one shot near Wick, and which was preserved by Sergeant Sandison of that town, on 20th May 1870, apparently the earliest county record. There are two, male and female, in the Industrial Museum at Edinburgh from Caithness (*auct.* J. Gibson, Curator, *in lit.*).

306. **Calidris arenaria** (*L.*). **Sanderling.**

Autumn visitant, and scarce. The only place in which we have observed them has been the sandy beach between Brora and Kintradwell.

Recorded as "rare" in Dr. Sinclair's List. A specimen is included in the list of the collection at Welbeck Abbey, our only other authority for Caithness.

307. **Tringites rufescens** (*Vieill.*). **Buff-breasted Sandpiper.**

[On Dr. Sinclair's List.]

308. **Bartramia longicauda** (*Bechst.*). **Bartram's Sandpiper.**

309. **Actitis hypoleucos** (*L.*). **Common Sandpiper.**

Summer visitant; abundant all through the county; arriving about the end of April, and leaving directly the young are able to fly well. We have met with this species 2500 feet above the sea, in the old pass over Ben Chaorin. Breeds both inland and on the islands of the sea-lochs.

Wolley has the note, "Called 'Goberleery' in Gaelic in Sutherlandshire, from the noise it makes in the breeding season" (Woll. *E.-B.*, iii. p. 293), and the same name is in use there still.

Caithness name—"*Willy Wet-Feet.*" Common summer visitant, breeding along the edge of all those lochs that have stony margins, and also along the river-banks (O. MSS., 1868).

310. **Totanus macularius** (*L.*). **Spotted Sandpiper.**

[A specimen recorded by Dr. Sinclair as being in his collection.]

Mr. Reid writes: "This is an error; it is not a spotted sandpiper." Mr. Reid had a skin of the spotted sandpiper sent him by Mr. J. H. Gurney for comparison. Mr. Gurney says: "The birds were very unlike," and thought Dr. Sinclair's specimen was a redshank in peculiar plumage. Dr. Sinclair's bird passed into Mr. Reid's possession, having been given to him by Mrs. Sinclair.

311. **Totanus ochropus** (*L.*). **Green Sandpiper.**

Very rare visitant. One shot at Helmsdale in the winter of 1879, as far as we can remember, came to Inverness to be preserved, where we saw it in Mr. Macleay's shop.

Dunbar, in his 1844 List, says: "One killed at Bonar Bridge, 18th October 1844."

[In the collection of Dr. Sinclair, and in the reproduced List of Mr. R. I. Shearer.]

312. **Totanus glareola** (*L.*). **Wood Sandpiper.**

313. **Totanus flavipes** (*Gm.*). **Yellowshanks.**

314. **Totanus calidris** (*L.*). **Redshank.**

Resident, and abundant; generally distributed through the whole of the county in the breeding season, preferring those places, generally marshy, where there are tufts of grass in which to hide its nest; retires to the coast in winter. Rarer in the west, but common at one locality in Assynt. Less plentiful about Tongue than the greenshank.

Common and resident, breeding in the inland marshes, and retiring to the coast for the winter (O. MSS., 1868).

Appeared common along the Thurso river at Brawl, Halkirk, etc., in 1885.

315. **Totanus fuscus** (*L.*). **Dusky Redshank.**

[In the collection of Dr. Sinclair, and in the reproduced List of Mr. R. I. Shearer.]

316. **Totanus glottis** (*Pall.*). **Greenshank.**

A summer visitant, generally distributed through the whole of the county. This is one of the most interesting of the Sutherland birds. On their arrival, about the middle of April, they go almost at once to their nesting-grounds, remaining a very short time on the low lands in the valleys; when the young are able to fly well they seem to go straight away to the south, not remaining long anywhere about the shores, at least in the east of the county. The nest is generally placed on a dry hillock, amongst stones and lichens, or

burnt heather ground, and the young are taken by their parents to the nearest marsh as soon as hatched.

Its local name in the west is "*Teoch-vingh*," in imitation of its cry.

Mr. Wolley has the following note:—After referring to eggs of this bird in Hancock's collection, one in Mr. Bantock's possession, and four given to him (Mr. Wolley) by John Sutherland, and now in the collection, he goes on to say: "At this time I believe the collections of eggs just mentioned were the only ones in Britain which contained the eggs of the greenshank" (Woll. *E.-B.*, iii. p. 291).

A summer visitant, but apparently not so common as in the neighbouring county of Sutherland, which is probably its greatest breeding haunt in the British Isles (O. MSS., 1868).

Mr. W. Reid says that the greenshank does not breed in the county regularly, but, as we know it breeds in the extreme north-east of the adjoining county, far from uncommonly, as compared with other districts, the north-west of Caithness is probably their likeliest distribution. Braemore and Shurrery are both given as breeding localities of this bird by Mr. MacNicol.

317. **Totanus solitarius** (*Wils.*). **Solitary Sandpiper.**

318. **Macrorhamphus griscus** (*Gm.*). **Red-breasted Snipe.**

319. **Limosa lapponica** (*L.*). **Bar-tailed Godwit.**

Autumn and winter visitant, occurring on the south-east coast in most seasons, in small parties; has been seen and shot in the months of September, November, and December.

Mr. Osborne records only the occurrence of three of these birds in Caithness. They haunted the neighbourhood of Sarclet Loch, and one was shot and came into the possession of Mr. Shearer, but no date is given (O. MSS., 1868).

In Mr. L. Dunbar's List, a godwit, most probably of this species, is mentioned as having been killed at Freswick by Mr. Wormald on October 25th, 1878.

320. **Limosa melanura** (*L.*). **Black-tailed Godwit.**

Obs.—We would like to know what became of the specimen, said to be of this species, recorded by "Nether Lochaber" (the Rev. Alex. Stewart of Ballachulish) as having been shot near Helmsdale (*Inverness Courier*, December 26, 1881). Macleay of Inverness in all his experience has only had one or two examples of this bird in his shop, and it is an extremely rare species in Scotland.[1]

321. **Numenius borealis** (*Forst.*). **Esquimaux Curlew.**

322. **Numenius phæopus** (*L.*). **Whimbrel.**

Spring and autumn visitant; not very rare on the east coast.

We can obtain no definite or trustworthy account of this species breeding in the county, notwithstanding Mr. Dunbar's statement (*Ibis*, 1865, p. 435). It occurs during spring migration on the north coast, and was supposed to retire to the interior to breed, but there is every reason to doubt this, and to believe it leaves by a more northerly track. We have before criticised all previous records (*Proc. Nat. Hist. Soc. Glasgow*, 1875, p. 111). An egg handed to us as having been taken on an island in Glen Coul, Assynt, and as belonging to this species, is—however like a whimbrel's—not authenticated, and may quite well be a deformed one of the common gull. The texture is not that of a whimbrel's egg.

The whimbrel was observed, however, in May 1882, in Badcall Bay, Edderachyllis, a single bird—by Mr. J. C. M. Wallis—no doubt, however, only on migration.

[1] It was corroborated by a "distinguished ornithological friend in the south." Why not have given his name? Such records lose all their value by these vague modes of adducing evidence.

Mr. Osborne considers this a resident species. In his MSS. he says: "The whimbrel, little whaup or half curlew, is an indigenous Caithness species, but its numbers are few as compared with the common curlew, and it is not so well known. In winter it resorts to the sandy shores of the sea, or the mud-banks at the mouths of rivers, but in the summer, like the allied species, it betakes itself to the moors and barren wastes in the upland districts, where it breeds. One of its breeding stations in this county is in a retired moorland district in Watten parish, where the ground is broken by dhulochs and marshes, and studded with many hillocks, and where also resort in the season common and black-headed gulls, Arctic skuas, ducks, etc." (O. MSS., 1868.) This account we consider is open to criticism, for it is most improbable that the bird should remain during winter on the sandy shores of Caithness, when it is only a spring and autumn migrant elsewhere.

323. Numenius arquata (*L.*). Curlew.

Resident in the east; most abundant in the breeding season. These birds breed all through the moorland districts, coming to the green places in the straths about the third week in March; shortly after this they pair and go to their nesting-grounds.

Common in the west, but local in the extreme west. Increased around Loch Awe by 1877.

Common and resident, breeding on the moors, and retiring to the sea-coast in the autumn (O. MSS.).

Not observed as an abundant species by us in 1885 along the outer edges of the moors and inner edges of the cultivated areas.

Order 5. GAVIÆ.

Family LARIDÆ.

Sub-family *STERNINÆ*.

324. **Sterna macrura**, *Naumann*. **Arctic Tern.**

Summer visitant; common along all the eastern seaboard, breeding in scattered colonies. Common at various points on the west and north coasts, usually in colonies, and preferring insular positions.

A common summer visitant all round the coast, breeding generally on the banks of a loch or river some distance from the sea. One favourite site is in the vicinity of a moorland loch about four miles from Wick, and the birds in passing to and fro from the sea always follow the course of the river (O. MSS., 1868).

This species seems to us to outnumber the common tern. But on the Pentland Skerries perhaps the two are about equally common, occupying, however, different areas—the Arctic bulking on the eastern extremity of the main island, a few common terns associating with or flying amongst them, and the latter bulking most largely at the western side, a few of the Arctic terns associating with them.

325. **Sterna fluviatilis**, *Naumann*. **Common Tern.**

Summer visitant; more usually breeding near fresh water than the Arctic tern. Breeds at Loch Migdale, near Bonar.

We consider the Arctic tern the more abundant of the two species throughout the county, but we have ourselves taken eggs of the common tern on Loch Migdale. The statement that the common tern is found on a small island

near Handa (*Proc. Nat. Hist. Soc. Glasgow*, 1875.—J. A. H.-B.) may or may not be correct; the note made many years ago still stands in our note-book, but we again repeat it here, as perhaps deserving of further inquiry. We believe the common tern to be much rarer on the west coast of Scotland than on the east, but Wolley shot both species on the little islands off Badcall (Woll., *E.-B.* vol. iii.).

Caithness names—"*Kirinew*," "*Rittock*," "*Gull Teaser*." An occasional visitant to Caithness, and, according to Mr. Osborne, persecutes the gulls, and makes them disgorge their food in the same manner as the skuas (O. MSS., 1868).

Breeds abundantly on the Pentland Skerries (1885, J. A. H.-B.) along with the Arctic tern; but while the common tern is most abundant at the west end of the island, the Arctic is most abundant at the east end. These terns nest all over the flat, short grassy meadows of the Skerries.

326. Sterna dougalli, *Mont.* Roseate Tern.

327. Sterna minuta, *L.* Lesser Tern.

A rare summer visitant; a pair visited the shore between Brora and Kintradwell in 1871, and probably bred there; they were also seen in the same place in 1877. They have not been observed in the west to our knowledge.

"In Caithness it is a regular summer visitant, and appears to be well known on the east coast, its small size no doubt attracting a good deal of attention to it, and a few pairs are, in the season, always to be observed in the vicinity of Wick and Ackergill" (H. Osborne, in MSS.). Not observed by us in 1885.

328. Sterna bergii, *Lichtenstein.* Rüppell's Tern.

329. Sterna caspia, *Pall.* Caspian Tern.

330. Sterna anglica, *Mont.* Gull-billed Tern.

331. Sterna cantiaca, *Gm.* Sandwich Tern.

[*Obs.*—Dunbar includes it thus: "Loch Migdale, 1843"?]

332. Sterna fuliginosa, *Gm.* Sooty Tern.

333. Sterna anæstheta, *Scop.* Smaller Sooty Tern.

334. Hydrochelidon hybrida, *Pall.* Whiskered Tern.

335. Hydrochelidon leucoptera (*Schinz*). White-winged Black Tern.

336. Hydrochelidon nigra (*L.*). Black Tern.

337. Anous stolidus (*L.*). Noddy Tern.

Sub-family *LARINÆ.*

338. Xema sabinii (*Sabine*). Sabine's Gull.

This species was added to the Caithness Fauna by Mr. Reid of Wick, who describes, in the *John o' Groat Journal* for 25th of June 1885, one that was picked up by a boy near the loch of Sarclet, and, from the information he received at the time, it seems it had been fired at by some person, but flew away some distance and fell dead, a single pellet having entered the eye. It is now in the possession of Mr. E. S. Mackay, fish-curer, of Wick, where Harvie-Brown saw it in 1885—and is a lovely specimen.

339. Rhodostethia rosea (*Macgill*). Cuneate-tailed Gull.

340. Pagophila eburnea (*Phipps*). Ivory Gull.

Mr. M'Iver of Scourie has a specimen that was killed at Scourie in the winter of 1879-80.

One recorded in Shearer and Osborne's List was first brought under notice by Sir W. Jardine (*Proc. Roy. Phys. Soc.*, vol. i. p. 4, and vol. ii. p. 57) as the first time this species had occurred in this country, and one was shot at Thrumster in November 1854 [1] (Gray, *Birds of the West of Scotland*). Mr. James Sutherland is said to have seen the species also, but since then we have no records of this rare bird in our district until the year 1885, when Mr. John Guille Millais shot a very perfect adult specimen at the Bishop's Castle, Thurso, on the 30th December 1885, which is now in his collection. Mr. Millais informed us of it by letter immediately afterwards, and it is fully recorded in the *Northern Chronicle* of 6th January 1886. The bird was exhibited by him at a meeting of the Zoological Society of London on March 2d, 1886.[2]

341. **Larus atricilla**, *L.* **Laughing Gull.**

342. **Larus ridibundus**, *L.* **Black-headed Gull.**

Common, and resident on the east coast; choosing some extremely swampy place to breed in, inaccessible, as a rule, owing to the depth of the surrounding mud.

Much rarer in the west. Seen following the harrows at Durness, and breeds in a considerable colony at Loch Borralaigh along with terns, perhaps the only colony in the west or north-west of our district. Breeds also in the north-east in a colony near Bettyhill (Savile G. Reid's Journals).

Caithness names — "*Hoodie-Headie-Craw*," "*Peewit Gull*," "*Mire Crow*," "*Pick Mire*." A common species, breeding

[1] Sir W. Jardine seems to have considered this specimen to belong to an allied form—*P. brachytarsus* of Holboll (*Proc. Roy. Phys. Soc.*, vol. ii. p. 57, Jan. 1859, and also vol. i. p. 4)—but we are not aware that there is any necessity to insist upon this point.

[2] Harting includes twenty-two specimens of the ivory gull, four of which relate to Orkney, Shetland, and Caithness (*Handbook*, pp. 174, 175).



EGGS OF LARUS RIDIBUNDUS.

VARIETIES TAKEN IN SUTHERLAND

BANKS & Co EDINBURGH

in many localities throughout the county, a very extensive one being the Loch of Stemster, where the eggs are systematically taken in enormous numbers (O. MSS., 1868).

343. **Larus melanocephalus**, *Natt.* **Adriatic Gull.**

344. **Larus ichthyætus**, *Pall.* **Great Black-headed Gull.**

345. **Larus minutus**, *Pall.* **Little Gull.**

Very rare visitant. The only specimen known to us is a dried-up mummy that was picked up in a cart-rut near Balnacoil in the spring of 1874.

[In Dr. Sinclair's collection; seen there by Mr. J. Wilson.]

346. **Larus philadelphia**, *Ord.* **Bonaparte's Gull.**

347. **Larus canus**, *L.* **Common Gull.**

Resident, and abundant the whole year round on the east coast; like the other gulls, retiring to the hill lochs to breed, which it usually does in colonies like the black-headed species. Breeding numerously in the west, in colonies, on the islands of both sea and fresh water lochs. A very tame bird of this species was well known to anglers on Loch Awe, Assynt, in 1880, coming to be fed always at lunch-time. Several colonies between Dalvina and Armadale are noted by S. G. Reid.

Much better known in the inland situations than on the sea-coast, to which latter place it only resorts in hard weather, when its usual haunts are frozen up. This species has several breeding-places in the county, generally on islands in lochs, or in wet, marshy places on the moors (O. MSS., 1868).

348. Larus argentatus, *Gm.* Herring Gull.

Common all the year round on the coasts; retiring in the east, inland to breed, where it mixes with *L. fuscus*, the two species nesting side by side.

Caithness names—"*Maw*"; young bird, "*Skorrie.*" Resident, and most abundant, breeding in the sea-cliffs; never, according to Mr. Osborne, in the flows of the interior of the county, as is the case in Sutherland. Their movements are watched by the fishermen during the herring season, as by their presence they denote where the shoals of fish are to be found (O. MSS., 1868).

As the lesser black-backed gull has decreased, so apparently has the present species increased in numbers. The whole coast may be described as one vast gullery of these birds. At Dunnet there are five miles of cliffs, of from 50 to 320 feet high, occupied by herring gulls, and everywhere they are abundant, and still increasing. All along the Dunnet coast we only met with one pair of lesser black-backed gulls, and these were being severely handled by mobs of herring gulls.

349. Larus fuscus, *L.* Lesser Black-backed Gull.

Very common in summer, much less numerous in the winter. Breeds in numbers about the hill lochs of the east coast, and often away from the lochs, on the flow-ground. Less numerous now than ten years ago; and the same may be said of the species just mentioned, and also the next in order, as the eggs are smashed and the young killed on all possible occasions by the shepherds and gamekeepers, on account of the damage they do. On some of the large flows in the centre of the county gulls are now almost extinct, where ten years ago they were abundant. In the west, found generally mixing with herring gulls, where the

latter breed inland, but occupying independent colonies on the Badcall Islands, and on an island of Loch Scheanaskaig, in West Cromarty.

An abundant and resident species, breeding both on the cliffs of the coast, and in the wet flows of the interior of the county (O. MSS., 1868).

Very scarce in 1885; exterminated in many places in the interior, or almost so. There is still one good-sized colony on Dunbar's Stack, south of Wick, where there are about thirty pairs in all. At one time the whole of Dunbar's Stack was occupied exclusively by the lesser black-backed gulls; now the herring gull has taken part possession.

350. Larus marinus, *L.* Great Black-backed Gull.

Resident, though not abundant, the whole year round on the east coast; scarcer in winter, retiring to the hill lochs to breed; there is rarely more than a pair on a loch, if such is frequented by other gulls, and they often choose a solitary island, which they keep to themselves. Near Dornoch, however, we understand there is a loch tenanted by a colony of these birds. Breeds in a colony of about fifteen pairs on the summit of the Stack of Handa. A far inland locality, where a single pair breeds, is at a loch-side near Oykel Bridge. Used to be numerous around Loch Shin, according to Booth, but in 1868 he only found five pairs there (Rough Notes, Part ix.).

Caithness name—"*Gow Maw.*" A common but not abundant species the season through, generally placing its nest on the top of the isolated stacks that occur commonly along the coast (O. MSS., 1868).

Decidedly a rare bird in the county now. We saw one pair on the Stacks of Duncansbay in 1885, but none anywhere else. They are almost exterminated.

351. **Larus glaucus**, *Faber*. **Glaucous Gull.**

A scarce winter visitant to the east coast.

Not uncommon, particularly in the autumn and early winter, but nearly all those seen are birds of the year (O. MSS., 1868).

Mr. James Sutherland records one killed at the North Head of Wick, an immature bird. We have no special records from Caithness of the great invasion of Arctic gulls which so densely populated the Firth of Forth in the winter of 1872-73.[1] Had any great numbers visited the Caithness coast, we think they could hardly have escaped observation.

352. **Larus leucopterus**, *Faber*. **Iceland Gull.**

Winter visitant; not uncommon on the east coast.

Like the preceding, this is a common autumn and early winter visitor, in this case, too, the old birds being very scarce in comparison with the young (O. MSS., 1868).

353. **Rissa tridactyla** (*L.*). **Kittiwake.**

A visitant only to the east coast, generally in spring.

Breeds abundantly in the west, at Handa, and on Bulgie Island; also on the north coast cliffs near Cape Wrath, but not so abundantly. There are many roosting-places unoccupied by nests, such as one on Bulgie Island, and another on the east side of Eilean Garbh.

Caithness names—"*Facky*," "*Kitty-facky*." An abundant summer visitant, breeding in great numbers along the coast, one such station being the "Rowans," a rock of stupendous height some eight or ten miles from Wick. Here every available space has a nest (O. MSS., 1868).

[1] Vide *Proc. Nat. Hist. Soc., Glasgow*, Jan. 1873.

Not abundant anywhere along the north coast, except at Duncansbay Head, where there are some fair colonies, and larger ones on the east coast south of that headland.

Sub-family *STERCORARIINÆ.*

354. **Stercorarius catarrhactes** (*L.*). **Common Skua.**

An occasional visitant to the Caithness coast, most often seen during September and October. A living specimen that came into Mr. Osborne's possession, when food was thrown to it would spring suddenly on it, and stand over it with extended and rapidly moving wings. At such times it would rush at any unsuspecting fowl that came near it, and, getting its head in its bill, try to swallow the bird whole, which, of course, the skua was unable to manage. Its cry was "Skui, skui," from whence probably the name "Skua" (O. MSS., 1868).

355. **Stercorarius pomatorhinus** (*Temm.*). **Pomatorhine Skua.**

Rare visitant; four were seen at Balnacoil on the 13th of October 1879, a year famous for the number of these birds obtained all through the country.

Note.—These birds appear to frequent the ocean and seas of the Outer Hebrides in some numbers every summer of late years. We saw them not uncommonly west of Lewis in 1881.

An extremely rare visitant to Caithness (O. MSS., 1868).

Mr. L. Dunbar records one shot at Dunnet Sands—a young male—stuffed by him, and now in the possession of Mr. Trail, Castlehill, and a specimen is included in the Welbeck Abbey collection. Mr. Reid mentions having obtained another specimen during the year they were so prevalent all over the kingdom (1879).

356. Stercorarius crepidatus (*Banks*). Richardson's Skua.

Autumn visitant; breeding in one place in the county only, as far as is known to us; a pair, and no more, coming to the same spot year after year.

Stray examples have occurred in the west, but there are no known breeding-sites. We have received the bird in the flesh from Handa, but assuredly it does not breed there.

Mr. Osborne observes of this bird: "In Caithness it is a well-known and abundant species, breeding in considerable numbers on the wide moors and marshy tracts of the interior of the county. A low and remote piece of moorland of this description in Watten parish, surrounded by thousands of acres of grouse moors and sheep grazings, and studded by numbers of small lakes or 'dhulochans,' containing mossy mounds and islands of varied size and shape, formed for many years a favourite breeding-station of the Arctic gull. It is to be feared this interesting colony is now thoroughly broken up, the property having a few years ago come into the possession of an English nobleman, whose gamekeepers promptly declared war against the gulls; and the ultimate result may be surmised from the fact, that in the first year, among other birds, no fewer than eighty skuas were destroyed."[1] Still common in the autumn, hunting the successful among the flocks of gulls that come after the herrings on the east coast (O. MSS., 1868).

357. Stercorarius parasiticus (*L.*). Buffon's Skua.

["Buffon's skua has been found breeding in Caithness, though not for some years past" (Gray, *Birds of the West of Scotland*, p. 499).]

[1] See Seebohm's *British Birds*, vol. iii. p. 353.

Order 6. TUBINARES.

Family PROCELLARIIDÆ.

358. **Procellaria pelagica**, *L.* **Stormy Petrel.**

Apparently a rare visitant. A specimen in the Dunrobin Museum was taken at Scourie on the 30th of October 1845.

We have never found this species breeding in Sutherland, but can scarcely believe but that it is to be found nesting on the Badcall Isles, and elsewhere (see under STARLING, *antea*, p. 144). They occur in misty or hazy weather, not infrequently at the lighthouse lanterns of Cape Wrath, and they were discovered breeding in peat-hags on Roan Island, Kyle of Tongue, in 1884 for the first time.

An occasional visitant to Caithness, but often seen by the fishermen, when fishing off the coast (O. MSS.).

Mr. Dunbar says, "found inland some miles," and records a specimen so found—November 3, 1884, and others are not infrequent under similar conditions. Occurs commonly in the Pentland Firth, as well as out at sea, being often seen by Wick fishermen. One caught by a Wick fisherman is in the collection of Mr. H. W. Doeg, and this was sent him in the flesh. Breeds upon the Pentland Skerries, but, so far as known, only very sparingly.

359. **Procellaria leucorrhoa**, *Vieill.* **Leach's Petrel.**

A rare visitant. There is a specimen in the Dunrobin Museum that was taken at Forsinard on January 10, 1877.[1]

[In Dr. Sinclair's collection; called Bullock's Petrel by Messrs. Sinclair and Wilson.]

[1] As this species breeds on North Rona, it may occasionally be expected to occur in Sutherland. (See Mr. J. Swinburne's Notes, *Proc. Roy. Phys. Soc.*, 1883-4, and Harvie-Brown, *op. cit.* 1885-6.)

360. Oceanites oceanicus (*Kuhl*). Wilson's Petrel.

361. Puffinus anglorum (*Temm.*). Manx Shearwater.

Caithness name—"*Skookie.*"[1] "The Manx Shearwater is usually accounted a rare Caithness bird, but an intelligent fisherman of this place (Wick), who is of more observant habits than most of the fraternity, refers to a bird, under the sufficiently expressive name of 'Skookie,' that can be none other than the Manx Shearwater. His description of the flight, size, and appearance of the 'Skookie,' tallies in every respect with the shearwater, and he says they are by no means uncommon on the east coast, and that he has caught three or four in a day by means of a baited hook" (H. Osborne, in MSS.).

362. Puffinus griseus (*Gm.*) Sooty Shearwater.

[Under the name of *Puffinus cinereus*, the Cinereous Shearwater, this is catalogued by the late Dr. Sinclair of Wick as a "rare visitant" to the county of Caithness.]

363. Puffinus major, *Faber*. Great Shearwater.

364. Fulmarus glacialis (*L.*). Fulmar Petrel.

Obs.—W. Dunbar includes this as "numerous at Handa Island." We fear this statement condemns his list altogether.

Mr. Osborne records this species as a rare visitant (O. MSS., 1868).

365. Œstrelata hæsitata (*Kuhl*). Capped Petrel.

366. Bulweria columbina (*Moq-Tand*). Bulwer's Petrel.

[1] They are known to breed in Orkney, so their occurrence at sea off Caithness might be expected.

Order 7. ALCÆ.

Family ALCIDÆ.

367. **Alca torda**, *L.* **Razorbill.**

Occasional in winter and spring; numbers thrown up dead after a storm on the east coast, on these occasions far outnumbering the guillemots in quantity, in about the proportion of six to one.

Abundant on Handa and elsewhere, such as Cearvig Bay and Cliffs of Clomore, etc., on the north coast. The annual reports of the Committee on Migration of Birds for the British Association show with what marvellous regularity they appear at their various breeding-stations, and then leave again in autumn, along with other rock-birds.

A common species in many parts of the Caithness coasts, inhabiting somewhat similar places as the guillemot. A large colony occurs, almost to the exclusion of guillemots, on the rocks of the east coast at a place south of Hempriggs Castle.

Alca impennis, *L.* **Garefowl.**

(*See* Introductory Remarks.)

368. **Lomvia troile** (*L.*). **Common Guillemot.**

Occasional visitant on the east coast, especially in winter and spring, and often thrown up dead after a storm.

When guillemots or razorbills are observed swimming near the shore in winter on the east coast, they are generally, if not always, weakly birds, and probably perish.

Exceedingly abundant on Handa; the summit of the Stack and the regular niched ledges of the cliffs literally swarming with life. The bridled or ringed variety (*U.*

lacrymans or *U. ringvia*) is in proportion to the others as one or two in every ten or a dozen. The identity of those forms has been placed by us beyond doubt. The regularity of the migration from east to west in autumn at all the north coast lighthouses, and the dates of commencement and completion, are interesting (see Migration Reports, 1879-1883).

Caithness name—"*Awpie.*" Very common, and breeding in all suitable localities along the coast-line, a few birds being seen off the coast in winter. The ringed variety is also common on the east coast (O. MSS., 1868).

Wolley, in 1849, says: "I calculated" the percentage of bridled birds amongst the common variety "at almost one in five or six. This happened at Holborn Head, on the Cleat, on April 22d, 1849. There was a large assemblage on the level ground on the top of that stack, a cluster of some hundreds apparently closely huddled together" (Woll. *E.-B.*, vol. iii. p. 333). In 1885 Harvie-Brown saw the same large colony, but could not take stock of the bridled birds so as to be able to count them, as their heads were only visible over the grasses, and were constantly moving. He tried in vain, but gave it up. In 1880 Mr. George M'Lauchlan, at that time lighthouse-keeper at Dunnet Head, estimated the number of guillemots hatched out at Dunnet Head at about 350; and he adds: "I can count 175 bridled ones in say 350!" Mr. M'Lauchlan has had, in his time, much experience of rock-bird stations—such as Barra Head,—so we consider his testimony worth preserving.[1]

369. **Lomvia brunnichii**, *Sabine.* **Brunnich's Guillemot.**

[In Mr. Gray's *Birds of the West of Scotland*, p. 422, he says: "The late Mr. Wilson of Woodville, in his *Voyage*, men-

[1] *Barra Head and its Bird Life.*

tions having seen a specimen in the collection of Mr. G. S. Sinclair of Wick; it had been shot in Caithness, and was preserved by Mr. Sinclair, who was unable to name the species (although its peculiarities were observed) until Mr. Wilson identified it." There seems in this case, as perhaps in several others seen by Mr. Wilson, to be no reasonable doubt of his identification of the specimen. It is also stated to have occurred in Sutherlandshire by Mr. A. G. More (*Ibis*, 1865), on the authority of Sir W. E. Milner, and so we prefer to err on the safe side, and retain the record, but still *in parentheses.*]

370. **Uria grylle** (*L.*). **Black Guillemot.**

A spring visitant to the east coast.

Breeds not uncommonly on the west coast, and in a colony on the Badcall Islands. Once plentiful on Handa; now rare, if indeed present at all, and the cause assigned for their extinction by the cragsmen—the brothers Mathieson —is that rats have managed to dislodge them. We have found that the males assist in incubation, as they have been taken off the eggs, having one or two hatching spots on the breast. These birds are abundant also along the north coast, west of Loch Eriboll.

"*Tystie*," "*Tystay*," in winter plumage "*Jenny Grey*." Also known as the "Greenland Dove," "Sea Turtle," "Puffinet."

Common on the Caithness coast (O. MSS., 1868).

A common species in 1885 in the "göes" of the east coast south of Duncansbay Head; often breeding at a considerable altitude in the old red sandstone cliffs—indeed higher than Harvie-Brown ever remembers observing them before.

371. **Mergulus alle** (*L.*). **Little Auk.**

Winter visitant, but not occurring every year.

An occasional winter visitant; most frequently found along the coast in a dead or dying condition, after heavy storms at sea. The latter end of January 1862 was remarkable for the numbers that were cast ashore after a heavy south-easterly gale (O. MSS., 1868).

Mr. W. H. Doeg had one sent off alive to him, but which died *en route*, obtained on 13th November 1880, near Wick. It occurs also not unfrequently on the Pentland Skerries, where Harvie-Brown picked up a wing of the species in 1885, and it is well known to the lighthouse keepers.

372. **Fratercula arctica** (*L.*). **Puffin.**

A scarce winter visitant to the east coast.

The principal colonies of these birds on the west and north are: at Handa, about three miles of cliff, and slopes east of Cearvig Bay, occupied in many places from base to summit, which are 380 feet in height—a marvellously fine colony; at Clochbheag, near Durness, and scattered colonies at other points. They used to breed at Garbh Island numerously, but are now rare there; having been persecuted, they have taken to the higher cliffs of Clomore and Cearvig. Rats have also driven them off the tops at Handa into more secure crevices in the face and slopes.

A common summer visitor to Caithness, being well known all round the coasts (O. MSS., 1868).

In 1885 abundant at Dunnet Head, especially west of the Head, in turf ledges and débris slopes, but common also all along the north coast. If anything, rarer on the east coast cliffs.[1]

[1] We have visited most of the great puffin colonies, and we consider much the largest (St. Kilda not excepted) are on the coast of North Sutherlandshire, between Cearvig Bay and Garbh Island, and the colony on the Shiant Isles is equal to that of St. Kilda. The highest cliff on the mainland of Scotland culminates at Clomore, over 600 feet in height.

Order 8. PYGOPODES.

Family COLYMBIDÆ.

373. **Colymbus glacialis, *L.* Great Northern Diver.**

Common along the east coast in winter and spring, but more abundant at the latter season. We have a fine specimen in our collection, obtained on one of the pools of the Brora river in May. Found in the Kyle of Tongue all the year round, but most abundantly from September to February. We have recorded the presence of a pair on a far inland fresh-water loch in midsummer (see *Zool.*, 2d Ser., p. 1309). We do not wish again to insist on the fact of their breeding, but we still adhere to the correctness of our statement as to their identification on that occasion.

A common winter visitant to the county, and in stormy weather it not unfrequently ascends the Wick river after small fish, specimens having been killed above Wick Bridge. They are often caught in the stake-nets in the bay, oftenest in the months of April and May (O. MSS., 1868). There is a specimen in the Welbeck Abbey collection.

Mr. Robert Gray[1] recounts an extraordinary struggle which was witnessed in Sinclair Bay, Caithness, between a great northern diver and an angler (*Lophius piscatorius*). The bird, no doubt in diving, had accidentally thrust its head and neck into the open jaws of the fish.

374. **Colymbus arcticus, *L.* Black-throated Diver.**

Summer visitant, breeding on many of the lochs in the eastern district; rarely seen on the coast, going straight to their breeding-grounds, and leaving at once for the south as soon as the young can fly. Few large lochs are without a pair

[1] *Birds of the West of Scotland*, p. 413.

of these birds. Very common in the west, where this species outnumbers the red-throated species; in the north-east, however, the proportions appear to be reversed: it prefers large lochs with green islands for breeding purposes.

In Dr. Pococke's *Tour* occurs the statement that Mr. Munro shot a bird of this (or the last?) species at the upper end of the Kyle of Sutherland, which "was the only bird of the kind that had been seen at that time" (*op. cit.*, p. 8).

In comparison with the last named, this is a rare winter visitor to the Caithness coast (O. MSS., 1868).

Recorded as breeding in the county, and specimens obtained in the "flow" country, dating in May (Savile G. Reid's Journals and other sources).

Captain Savile G. Reid aptly describes in his Journals a pretty and well-known habit of the divers, viz., that of lying over on one side on the water, and sometimes almost on their back, in order to preen the breast feathers with the bill. The nest now deposited by Captain S. G. Reid and Major Irby in the British Museum, and taken in Caithness in 1886, had been slung upon a stick, and carried several miles over soft flow-land, a piece of work deserving of the fullest appreciation by the authorities, seeing that, to ensure the specimen being good and perfect, several pounds' weight of earth, or moss and peat, had to be cut out of the solid mother earth.

375. Colymbus septentrionalis, *L.* Red-throated Diver.

Summer visitant, but not nearly so abundant in the eastern districts as the last named; getting more numerous towards the north-east and north, where their numbers are about three to one of the last-named species. We have received a good many eggs from the north-east, about Strathy and Farr. This species prefers mossy tarns with green edges for nesting purposes, and is rarely found breeding on the

islands of the larger lochs. It is seen at times on the Dornoch Firth, but is not very abundant on the west coast.

Frequented in 1885 the small lochs at the sources of the Calda Burn, in Assynt, for the first time that year, and probably bred there. It had never been seen there before, previous to our stocking these high-lying lochs with trout in 1879.

The Caithness name for this and the preceding species is "*Rain Goose*"; this is a regular winter visitor, a few pairs remaining to breed in the county (O. MSS., 1868).

Mr. L. Dunbar records specimens from the "flow" country, dating in May, and speaks of its breeding in the county.

Family **PODICIPITIDÆ.**

376. Podiceps cristatus (*L.*). Great-crested Grebe.

This species has been killed by Mr. Jennins on the Dornoch Firth.

Loch Cracle is again mentioned by Mr. Dunbar as a locality.

One of the rarest Caithness visitants (O. MSS.).

377. Podiceps griseigena (*Bodd.*). Red-necked Grebe.

Obs.—No actual record of the occurrence of this species has reached us.

"The red-necked grebe is one of our winter visitants, and although far from being plentiful either on the sea-coast or in the interior of the county, it yet cannot be described as uncommon. I have frequently observed specimens on the Wick river, and on the lochs of Sarclet, Hempriggs, etc., in this neighbourhood" (O. MSS., 1868).

378. **Podiceps auritus** (*L.*). **Sclavonian Grebe.**

A casual winter visitant. A bird of this species was taken in a garden at Golspie in December 1882. The person who caught it kept it alive for a week on fish, but it at last died, and is now preserved in the Dunrobin Museum. It occurs also in the Dornoch Firth.

A rare winter visitant to Caithness (O. MSS.).

Obs.—Mr. L. Dunbar records an adult female dusky grebe shot at Westfield by Mr. MacNicol, keeper, on December 6th, 1878, and he also speaks of it as being occasionally met with. Mr. Reid also speaks of its occurrence in the county.

379. **Podiceps nigricollis** (*C. L. Brehm*). **Eared Grebe.**

380. **Podiceps fluviatilis** (*Tunstall*). **Little Grebe.**

Resident, but not abundant on the east coast, being seen most frequently in the winter; it breeds on Loch Brora. A favourite place in the winter is the stream that issues from the sluices at the Mound. Common about Dornoch, where three or four sittings of eggs can be obtained annually. Breeds near Balnakeil, Durness, and at Tongue, but rare or absent in the west. One was shot on Loch Mulach-Corry, at the base of Ben More, Assynt, a year or two previous to 1877, the first seen in the district by any of the natives, keepers, or shepherds.

Common and resident, breeding in many suitable localities, but is much rarer in winter (O. MSS., 1868).

Class 3. REPTILIA.

Sub-class *SQUAMATA.*

Order **OPHIDIA.**

Family **COLUBRIDÆ.**

1. Tropidonatus natrix (*L.*). Common Snake.

2. Coronella lævis (*Lacép.*) Smooth Snake.

Family **VIPERIDÆ.**

3. Vipera berus, *L.* Viper or Adder.

Abundant in most suitable localities; and more abundant, perhaps, than suspected, owing to its somewhat retiring habits. Common northwards to Cape Wrath, but rare in the limestone districts of Durness and Assynt. We certainly, in seventeen years' and longer experience of Assynt, do not remember seeing more than two or three on the banks of the Inver or Kirkaig. Said to be abundant on Coul More and Coul Beg, and very abundant all through the east and centre of the county, and in a certain birch-wood on the banks of Loch Shin.

Very common in Caithness in suitable places, on moors, etc. (W. Reid).

Order **LACERTILIA.**

Family **LACERTIDÆ.**

4. Lacerta vivipera, *Jacq.* Common Lizard.

"Not uncommon, especially on the moors between Aultnagealgach and Loch Urigill" (Alston and Harvie-Brown). Common almost everywhere in the east of the county.

"Common in moorland districts, and about the margins of hill lochs. I caught one some years since, and took it home with me, and kept it for a considerable time alive. My children fed it with house-flies, which it would only eat alive, and would catch one whenever it found it moving. One day when I was at breakfast, they came telling me the lizard had laid five eggs. I was rather surprised at this, knowing it always went under the name viviparous, but there they were, five eggs, and no mistake, about the size and colour of a Scotch tare, but flatter, and rather oblong. In less than an hour these eggs produced five young lizards, little black miniature crocodiles, tail, feet, and everything complete" (W. Reid, in MSS.).

Obs.—Pennant (Caledonian Zoology) and Sibbald (*Scotia Illustrata*, p. 11) both speak of the Lavellan, which the former speaks of as noxious to cattle. Pennant in his British Zoology speaks of its identity as somewhat doubtful: "I imagine it to be the same that the inhabitants of Sutherland call 'the water mole,' and those of Caithness the 'Lavellan,' which the last imagine poisons their cattle." Sibbald says (*loc. cit.*), "Lavellan animal in Cathanesia frequens, in aquis degit, capite mustelae sylvestri simile, ejusdemque coloris bestia est." Fleming asks what this Lavellan is, and whether it can be considered to be the water shrew, but Mr. Nicholson, presently living in Caithness, who has heard the name used, and the animal

described as "extremely rare, very nimble in movements, and having remarkable flashing eyes; regarded with superstitious horror; described as a sort of *lizard*, larger and brighter than the common lizard," which description seems confirmed by different evidence, disposes, we think, of Pennant's and Sibbald's identifications and of Fleming's doubts effectually. Mr. Nicholson, however, inclines to the belief that it is a partly mythical creature, and the name is applied to several species, as individual belief or fancy dictates.

5. Lacerta agilis, *L.* Sand Lizard.

6. Lacerta viridis, *L.* Green Lizard.

Family **SCINCIDÆ.**

7. Anguis fragilis, *L.* Slow Worm.

Not uncommon in the west of the county of Sutherland, especially about Scourie and Edderachyllis. Often seen on the dry dusty roads in summer. Occurs frequently in Strath Brora and Glencassley.

Mr. Reid says he never saw or heard of one in Caithness, but it may be found near Sutherland, *i.e.* in the south-east of the county.

Sub-class *CATAPHRACTA.*

Order **CHELONIA.**

Family **CHELONIDÆ.**

8. Dermatochelys coriacea (*L.*). Leathery Turtle.

9. Chelone imbricata (*Schweigg.*). Hawks-bill Turtle.

Class 4. AMPHIBIA.

Order **BATRACHIA URODELA.**

Family **SALAMANDRIDÆ.**

1. **Triton cristatus,** *Laur.* **Great-crested Newt.**

Not uncommon. Wolley recorded it, and Messrs. Alston and Harvie-Brown have met with it on several occasions near Loch Assynt, and the latter gentleman once close to Loch Inver. Met with also once in Glencassley by Buckley in 1875 or 1876.

2. **Triton taeniatus** (*Schneid.*). **Smooth Newt.**

Not uncommon.

3. **Triton palmipes** (*Latr.*). **Palmated Newt.**

The only record of this species as having been obtained in Sutherland is that by Mr. Wolley, who wrote in the *Zoologist* (1848, p. 2265), "I have to report the existence of our recently ascertained newt on the extreme north of the island. On the 1st August I found several females and one male in a little fresh-water peaty pool a few hundred yards from the high-water mark on the side of the hills which rise from Loch Eriboll, and on the west side of the loch. It is an inlet of the sea about 16 miles to the east of Cape Wrath, on the north coast of Suther-

land." Mr. Alston wrote, commenting on this: "We are not aware of the species having been found in any other parts of the North Highlands" (*Proc. Nat. Hist. Soc., Glasgow,* 1880, p. 149).

Mr. Reid tells us he never met with or heard of any species of newt in Caithness.

Order **BATRACHIA ANURA.**

Family **BUFONIDÆ.**

4. Bufo vulgaris, *Laur.* Common Toad.

Common, and ascends clear mountain burns to a considerable altitude, and is fond of clear stony streams coming off granite. Apparently rarer in the limestone districts.

Common, but less so than the frog.

5. Bufo calamita, *Laur.* Natterjack.

Family **RANIDÆ.**

6. Rana temporaria, *L.* Common Frog.

Universally distributed, but apparently rarer in limestone districts also.

Common everywhere.

7. Rana esculenta, *L.* Edible Frog.

FISHES.

In the following list of British Fishes we have included the whole of the Moray Firth, as being the most natural division we could make for the sea fish. We have tried to make it as full of detail as possible for the coasts of Sutherland and Caithness, and have given almost *in extenso* the notes so kindly supplied to us by Messrs. Peach and Reid. These gentlemen lived for many years at Wick, and made a study of the Natural History of that place, Mr. Peach especially taking up the branch of Ichthyology.

FISHES OF SUTHERLAND, CAITHNESS, AND THE MORAY FIRTH.

Class 5. PISCES.

Sub-class 1. *PALÆICTHYES.*

Order **CHONDROPTERYGII.**

Sub-order *PLAGIOSTOMATA.*

Division SELACHOIDEI.

Family **CARCHARIDÆ.**

1. **Carcharias glaucus** (*L.*). **Blue Shark.**

Rare. Cast ashore near Kintradwell after a storm. A specimen in the Dunrobin Museum is dated Kintradwell, November 1871.

2. Galeus canis, *Bonap.* Common Tope.

3. Zygæna malleus (*Risso*). Hammer-headed Shark.

A specimen is recorded by Edwards from Banff, picked up on the shore about two miles beyond Whitehills in 1861.

4. Mustelus vulgaris, *Müll. and Henle.* Smooth Hound.

Caught by us on long lines off Stoirhead in forty fathoms of water. Noticed by Mr. Peach at Wick.

Family **LAMNIDÆ.**

5. Lamnia cornubica (*Gm.*). Porbeagle.

A specimen in the Dunrobin Museum is labelled "Loch Inver, 1875"; and our fishing party caught another on a long sea-line at Loch Inver in 1881, which weighed 56 lbs.

Mr. Peach observes that they are caught "pretty often" about Wick, one over 6 feet long on May 9th, 1860. Mr. Reid mentions one of $7\frac{1}{2}$ feet, which was carted away for manure after the liver had been taken out.

6. Alopecias vulpes (*Gm.*). Thrasher Shark.

A whale was brought ashore near Wick, said to have been killed by a thrasher; the combat was observed from the cliffs by the fishermen, who secured the dead whale. Another specimen was taken at Fortrose, Ross-shire, in 1846 (Martin).

7. Selache maxima (*Gunner.*). Basking Shark.

One over 26 feet long was brought into Boathaven near Wick, which had rolled itself into the herring-nets; an inoffensive-looking creature (Peach).

Family **NOTIDANIDÆ.**

8. Notidanus griseus (*Gm.*). Grey Notidanus.

Edwards mentions a large specimen of this shark taken in the Firth, and brought on shore at Whitehills in December 1857; it was afterwards bought for and placed in the Banff Museum.

Family **SCYLLIDÆ.**

9. Scyllium canicula (*L.*). Small-spotted Dogfish.

Common on the west coast, where we have taken it on long lines off Stoir Head. Edwards mentions it too as being occasionally taken off Banff.

10. Scyllium stellare (*L.*). Large-spotted Dogfish.

11. Pristiurus melanostomus, *Bonap.* Black-mouthed Dogfish.

[Mr. Edwards of Banff says he is led to believe that this species does occasionally occur in the Moray Firth, but gives no actual instance of its capture.]

Family **SPINACIDÆ.**

12. Acanthias vulgaris, *Risso.* Picked Dogfish.

An abundant species; often picked up dead along the shore, generally in autumn; very destructive to herrings in the net. Particularly abundant on the west coast of Sutherland in July 1882.

Caithness name—"*Sea Doug.*" In Caithness the liver was once used for making oil for the lamps with rush pith wicks; paraffin has now superseded this; the flesh is dried without salt, and eaten raw (Peach).

13. **Læmargus borealis** (*Scoresby*). **Greenland Shark.**

Reported by Mr. Peach as occurring occasionally. Recorded by Fleming from the Pentland Firth in 1803; and on May 22, 1859, one 10 feet long was found entangled on a fishing-line (*vide* Brown, *Zool.*, 1860).

14. **Echinorhinus spinosus** (*Gm.*). **Spinous Shark.**

Family **RHINIDÆ.**

15. **Rhina squatina** (*L.*). **Angel Fish.**

Mr. Peach says this species is often caught by the Buckie fishermen, who call it "*Cattie*," but, being considered valueless, is thrown overboard.

Division BATOIDEI.

Family **TORPEDINIDÆ.**

16. **Torpedo nobiliana**, *Bonap.* **Torpedo.**

"A specimen of this very rare fish was landed here lately by a Lossiemouth trawler. Our fishermen had never seen anything like it before, and could not say what it was. The fish measured 28 inches in length, 19½ inches in breadth, and weighed 13 lbs. It was sent to Edinburgh, and at a meeting held since, it was exhibited by Professor Cossar Ewart as a new torpedo, which he said seemed to correspond with the *Torpedo hebetans* (?). This specimen was considered by Professor Ewart to be the only one ever found north of the English Channel. He recommended the Fishery Board, to whom it was sent by Mr. Low of Wick, to present it to the Museum of Science and Art after preservation, and which I have no doubt has been done" (W. Reid, in *Land and Water*, Jan. 22d, 1884). This specimen is now in that Museum.

Recorded from Banff by Edwards, in 1817, and subsequently.

Family **RAJIDÆ**.

17. Raja clavata, *L.* Thornback Ray.

Very abundant all round the coasts.

8. Raja maculata, *L* Homelyn Ray.

Edwards mentions that this ray is occasionally met with.

19. Raja radiata, *Donovan.* Starry Ray.

Edwards mentions that this small ray is picked up now and then. Also mentioned by Mr. Peach from Wick.

20. Raja circularis, *Couch.* Sandy Ray.

"This species is well enough known to the fishermen, but they do not often take it" (Edwards).

21. Raja batis, *L.* Skate.

Abundant all round the coasts.

The variety *intermedia*, or Flapper Skate, is reported by Edwards to have once occurred on the Banff coast.

22. Raja marginata, *Lacép.* Bordered Ray.

23. Raja lintea, *Fries.* Sharp-nosed Ray.

"Large individuals of this species are sometimes taken with the more frequent of our rays" (Edwards).

24. Raja fullonica, *L.* Shagreen Ray.

Recorded by Edwards as occasionally taken.

25. Raja vomer, *Fries.* Long-nosed Skate.

Family **TRYGONIDÆ.**

26. Trygon pastinaca (*L.*). Sting Ray.

Family **MYLIOBATIDÆ.**

27. Myliobatis aquila (*L.*). Eagle Ray.

28. Dicerobatis giornæ (*Lacép.*). Horned Ray.

Sub-order *HOLOCEPHALA.*

Family **CHIMERIDÆ.**

29. Chimæra monstrosa, *L.* Northern Chimera.

One recorded by Edward as being brought ashore by a herring-boat in 1859; it was found floating, and quite dead.

Order **GANOIDEI.**

Sub-order *CHONDROSTEI.*

Family **ACIPENSERIDÆ.**

30. Acipenser sturio, *L.* Sturgeon.

Mr. Crawford informs us that this species occurs off the north coast of Sutherland, and there is a specimen in the Dunrobin Museum.

Although included by both Mr. Peach and Mr. Reid in their lists of fish, neither gentleman is able to give a date. Mr. Peach says: "I have a dim recollection of a sturgeon

having been caught in Caithness. I remember a large fish having been seen in Wick river, and often saw it splashing about, myself. It was said to be a sturgeon." Mr. Reid says: "I have some recollection that one of these was got at Thurso a few years ago, but have not the particulars."

Sub-class *TELEOSTEI.*

Order 1. ACANTHOPTERYGII.

Division ACANTHOPTERYGII PERCIFORMES.

Family **PERCIDÆ.**

31. Perca fluviatilis, *L.* Perch.

Mr. Houstoun of Kintradwell introduced a few of these fish into a small pond near his house, but they do not seem to have done well, and some were also introduced near Tongue, where Mr. J. B. Duncan, Secretary of the Scottish Fisheries Improvement Association, caught one with the fly in 1885 (J. B. D., *in lit.*).

32. Labrax lupus (*Lacép.*). Basse.

Recorded by Dr. Joass from near Golspie, and by Mr. Peach from the Kyle of Tongue, and the north coast.

Mr. Reid mentions one caught by a hook in Ackergill Bay in 1878.

33. Acerina cernua (*L.*). Ruffe.

[One is said to have been obtained off Troup Head about forty-two years ago.—Edward. We have included this species in brackets, as its occurrence seems so very doubtful.]

34. Serranus cabrilla (*L.*). Smooth Serranus.

35. Serranus gigas (*Brünnich*). Dusky Serranus.

36. Polyprion cernium, *Val.* Stone Basse.

37. Dentex vulgaris, *C. and V.* Sparus Dentex.

Edward mentions that he is aware of one specimen only, which was taken off Troup Head.

Family **MULLIDÆ.**

38. Mullus barbatus, *L.* Surmullet.

Taken in the Moray Firth (Gordon). Day's *Brit. Fishes*, vol. i. p. 24.

Very rare (Peach).

Family **SPARIDÆ.**

Group CANTHARINA.

39. Cantharus lineatus (*Mart.*). Black Sea Bream.

In Day's *Brit. Fishes*, vol. i. p. 27, we find that "in Banffshire a few of them are generally procured every autumn, or about the beginning of winter" (Edward).

40. Box vulgaris, *C. and V.* Bogue.

Group PAGRINA.

41. Pagrus vulgaris, *C. and V.* Braize.

42. Pagrus auratus (*L.*). Gilthead.

Edward records two from Banffshire; one taken in 1839, the other in 1841.

43. Pagellus centrodontus, *De la Roche.* Common Sea Bream.

Common in the Moray Firth, and were increasing in 1852 (Day's *Brit. Fishes,* vol. i. p. 37).

Very abundant in the sea-lochs of the west of Sutherland, and known by the local name of "Bulgarian Haddies." We have caught many of these fish at the head of Glen Coul, and also at Loch Inver. These sell in the London market sometimes at 1s. each, but are not reckoned marketable by the west coast fishermen, nor much esteemed as food.

"Barbadoes Haddock," usually corrupted into "Barbarian Hadday." Very common during the herring season, and often caught in the herring-nets, but totally disregarded as an article of food as long as any other fish can be obtained (Peach).

44. Pagellus bagaraveo (*Brünn.*). Spanish Bream.

45. Pagellus owenii, *Günth.* Axillary Bream.

46. Pagellus acarne (*Cuv.*).

47. Pagellus erythrinus (*L.*).

Family **SCORPÆNIDÆ.**

48. Sebastes norwegicus (*Müll.*). Bergylt.

Two or three examples of this fish are recorded by Dr. Day as having occurred on the south side of the Moray Firth.

Division ACANTHOPTERYGII SCIÆNIFORMES.

Family **SCIÆNIDÆ.**

49. Scisæna aquila (*Lacép.*). Maigre.

Division ACANTHOPTERYGII XIPHIIFORMES.

50. Xiphias gladius, *L.* Swordfish.

A small example, captured by a shrimper in Banffshire, is mentioned by Edward.

Division ACANTHOPTERYGII TRICHIURIFORMES.

51. Lipidopus caudatus (*Euphr.*). Scabbard Fish.

52. Trichiurus lepturus, *L.* Hair-tail.

Edward mentions that "a very fine specimen of this fish, which is rare in the British seas, and especially on the east coast of Scotland, was found in the Firth here in April 1876. Although the head and tail were a good deal injured, it measured over 12 feet in length."

Division ACANTHOPTERYGII COTTOSCOMBRIFORMES.

Family **CARANGIDÆ.**

53. Caranx trachurus (*L.*). Horse Mackerel.

Mr. Peach says this fish is often caught amongst mackerel, but always thrown away as worthless.

54. Naucrates ductor (*L.*). Pilot Fish.

Edward records a fine example from Banffshire.

55. Lichia glauca (*L.*). Derbio.

56. Capros aper (*L.*). Boar Fish.

Recorded from the south side of the Firth by both Edward and Gordon.

Family **CYTTIDÆ.**

57. Zeus faber, *L.* Doree.

Mr. Crawford mentions this fish as occurring about Tongue, and there is a specimen in the Dunrobin Museum, taken at Brora, March 6, 1883.

Mr. Reid also sends us the following:—"I picked up on the pier a small John Dory. It had been thrown out of a fishing-boat, as I supposed, as useless. I had never seen the species before, and had never heard of its having been got in this district. There was no mistaking the fish, although I thought it might have been a boar fish when I picked it up, but, on comparing it with Couch, there was no mistake but that it was a genuine Dory."

Edward also mentions it as taken, not uncommonly, in salmon-nets on the south side of the Firth.

Family **STROMATEIDÆ.**

58. Centrolophus britannicus, *Günth.*

59. Centrolophus pompilus (*L.*). Black Fish.

"In 1841, one 14 inches in length was taken at Lossiemouth" (Day's *Brit. Fishes*, vol. i. p. 113).

Family **CORYPHÆNIDÆ.**

60. Brama raii, *Bl.* Ray's Sea Bream.

Edward mentions it as rare on the Banffshire coast.

61. Lampris luna (*Gm.*). Opah.

Recorded by Edward as taken on several occasions on the south side of the Firth.

62. Luvarus imperialis, *Rafin.*

Family SCOMBRIDÆ.

63. Scomber scomber, *L.* Mackerel.

Common towards the end of the herring season; appearing in greater or less numbers; not much relished as food, however. It occurs also on the north and west coasts of Sutherland.

64. Scomber colias, *L.* Spanish Mackerel.

[Edward mentions this species as of doubtful occurrence. We have therefore placed it in brackets.]

65. Orcynus thynnus (*L.*). Tunny.

Day, *Brit. Fishes*, vol. i. p. 97, says: "In 1850 tunnies were common in the Moray Firth; one captured was 9 feet long; while another, killed near Inverness, was 5 feet" (Gordon, *Zool.*, 1852, p. 3459).

"In 1883 Mr. Speedie's salmon-fishers caught a tunny in the stake-nets at Strathy Bay; it was about 8 feet long, and in fine plump condition, but in place of having it preserved they cut it up" (Crawford, *in lit.*).

66. Orcynus germo (*Lacép.*). Germon.

67. Thynnus pelamys, *C. and V.* Bonito.

68. Pelamys sarda (*Bl.*). Pelamid.

69. Auxis rochei (*Risso*). Plain Bonito.

Couch, in his *Brit. Fishes*, vol. ii. p. 105, speaking of this fish, says: "It comes more rarely towards the north, although,

as I am informed by the Rev. Walter Gordon of Macduff, it has been met with in the Moray Firth."

70. Echeneis remora, *L.* Remora.

Family **TRACHINIDÆ.**

71. Trachinus vipera, *C. and V.* Viper Weever.

Found along the sandy shores of the east coast; taken by the seine-net at the Little Ferry.

Found also at Wick. Much feared by bathers and waders, as it hides in the sand with its dorsal fin protruding, a wound from which is sure to fester. This species seems to be commoner in the south of the Firth than the west.

72. Trachinus draco, *L.* Greater Weever.

Often caught in the herring-nets at Wick. The Caithness name for both these species is "*Stang Fish.*"

Family **PEDICULATI.**

73. Lophius piscatorius, *L.* The Angler.

"Wide Gab." Caithness name—"*Mers-gim.*" Numbers of these fish were taken by Mr. Houstoun in his skate-nets off Kintradwell this year (1884).

Mr. Reid mentions in *Land and Water* that one of these fish was caught on the surface by some fishermen holding a live gull in its mouth. The gull they let go, but killed the angler for the sake of its liver.

Family **COTTIDÆ**.

74. Cottus gobio, *L.* River Bullhead.

Common.

75. Cottus scorpius, *L.* Short-spined Sea Bullhead.

76. Cottus bubalis, *Euph.* Father Lasher.

Both these last two species are very common, and often caught by boys. They never refuse a bait, so that young anglers, whenever they spy one, have only to let their bait sink in front of it, and then pretend to draw it away; the fish is sure to make after and swallow it. When caught, the boys stick corks on his horns, or, in default of corks, the floats of the "bladder wrack," and then throw him back into the water, to watch the futile efforts of the poor fish to get to the bottom, his usual resting-place (Peach).

77. Cottus quadricornis, *L.* Four-horned Bullhead.

Recorded by Edward, but never found by him except in the stomachs of other fish.

78. Trigla cuculus, *L.* Red Gurnard.

Edward mentions this species as "pretty frequent" on the Banffshire coast, and the same is said of it on the Caithness side by Mr. Peach.

79. Trigla lincata, *Gm.* Streaked Gurnard.

Mentioned by Edward as "somewhat rare." He took one from the stomach of a great northern diver which had been sent him for preservation.

80. **Trigla hirundo**, *L.* Sapphirine Gurnard; Tubfish.

Edward says that "some splendid specimens of this fish are annually brought on shore by our fishermen towards the end of autumn.

81. **Trigla gurnardus**, *L.* Grey Gurnard.

Very common through the Moray Firth, and round the north and west coast of Caithness and Sutherland. In Caithness Mr. Peach says it is almost disregarded as food.

82. **Trigla lyra**, *L.* Piper.

Reported to us by Mr. Houstoun as common on the east coast of Sutherland.

83. **Trigla obscura**, *L.* Shining Gurnard.

Family **CATAPHRACTI.**

84. **Agonus cataphractus** (*L.*). Pogge.

Day, in his *Brit. Fishes*, vol. i. p. 69, says: "Gordon observed in the Moray Firth, in January 1849, ten examples, from 2 to 5 inches long, that were found in the stomach of a cod" (*Zool.*, p. 3458).

Mr. Peach states that it is not uncommon on the Caithness coast.

85. **Peristethus cataphractus** (*L.*). Mailed Gurnard.

Division ACANTHOPTERYGII GOBIIFORMES.

Family **DISCOBOLI.**

86. **Cyclopterus lumpus**, *L.* Lumpsrecker.

"Paidle Cock." Common along all the shores of the Moray

Firth, coming close in to spawn about April. One of 10 lbs. weight was taken at Golspie in 1884.

87. Liparis vulgaris, *Flem.* Sea Snail.

Of infrequent occurrence, but recorded by Edward from Banffshire, and by Mr. Houstoun from the east coast of Sutherland.

88. Liparis montagui (*Donov.*). Montagu's Sucker.

One specimen was obtained by Edward from Banffshire, and Mr. J. J. Peach obtained another sticking to the roots of some tangle in Wick Bay.

Family **GOBIIDÆ.**

89. Gobius niger, *L.* Black Goby.

Occurs on the rocky parts of the coast.

90. Gobius rhodopterus, *Günth.* Speckled Goby.

91. Gobius paganellus, *L.*

92. Gobius minutus, *Gm.* Spotted Goby.

Taken out of the stomachs of fishes by Edward.

93. Gobius ruthensparri, *Euph.* Two-spotted Goby.

Mr. Houstoun records a goby, probably of this species, from Kintradwell. Edward considers this the rarest of the three gobies met with by him on the south side of the Firth.

94. Latrunculus albus (*Parnell*). White Goby.

Reported by Edward as plentiful in the rock- and sand-pools of the Banffshire coast.

95. Crystallogobius nillsoni (*Day*).

"In May 1868 Mr. Edward obtained a male from a rocky pool at Banff" (Day's *Brit. Fishes*, vol. i. p. 173).

96. Callionymus lyra, *L.* Dusky Sculpin; Dragonet.

Recorded from Banffshire by Edward, who seems to have been well aware of the great difference between the sexes. Mr. Reid also says that the Wick trawlers often get specimens. The dragonet is the brilliantly-coloured male of the dusky sculpin.

Division ACANTHOPTERYGII BLENNIIFORMES.

Family **CEPOLIDÆ.**

97. Cepola rubescens, *L.* Red-band Fish.

Family **BLENNIIDÆ.**

98. Anarrhichas lupus, *L.* Wolf-fish.

According to Gordon (*Zool.*, 1852, p. 3460) the fishermen in the Moray Firth say that it (wolf-fish) is more plentiful in March than at any other season, and that some of them are as big as any cod, and are good for eating. On the east coast of Sutherland Mr. Houstoun says it is rare, generally being thrown up on the beach after a storm. The specimen in the Dunrobin Museum is labelled "Strathsteven Beach, February 1880."

99. Blennius gattorugine, *Bl.* Gattoruginous Blenny.

Met with on two occasions only by Edward on the Banffshire coast.

100. **Blennius ocellaris, *L.* Ocellated Blenny.**

101. **Blennius galerita, *L.* Montagu's Blenny.**

Edward took one specimen from the stomach of a cod in Banffshire.

102. **Blennius pholis, *L.* Shanny.**

Recorded from the Moray Firth by Day, *Brit. Fishes,* vol. i. p. 205; and also by Dr. Joass, Golspie. Mr. Peach found this fish on the north coast of the county.

103. **Carelophus ascanii (*Walbaum*). Yarrell's Blenny.**

One example taken in the Moray Firth in 1839 (Day's *Brit. Fishes,* vol. i. p. 207).

104. **Centronotus gunellus (*L.*). Butter-fish.**

Gordon (*Zool.,* 1852, p. 3460) records the butter-fish as very common in the Moray Firth in pools below high-water mark; it is also mentioned by Mr. Houstoun as occurring off the east coast of Sutherland, and by Mr. Peach as occurring off the north coast.

105. **Zoarces viviparus, *L.* Viviparous Blenny.**

Mr. Houston of Kintradwell records this as a species frequently met with in the sea-pools of the east coast, and Mr. Peach observed it on the north coast.

Mr. Peach says of the Blennies: "All go under the generic name of 'Brumple.'" The two last are very common between tide-marks under stones, and are used as bait for lythe, being drawn after the boat.

Division ACANTHOPTERYGII MUGILIFORMES.

Family **ATHERINIDÆ.**

106. Atherina presbyter, *Cuv.* Sand Smelt Atherine.

107. Atherina Boyeri, *Risso.* Boyer's Atherine.

Family **MUGILIDÆ.**

108. Mugil capito, *Cuv.* Grey Mullet.

109. Mugil chelo (*Cuv.*). Lesser Grey Mullet.

"*Pelcher.*" Common along the east coast of Sutherland in suitable places, and "pretty plentiful in Wick Harbour and mouth of the river in winter" (Peach). Seems to be much rarer on the south shores of the Firth, as Edward had only met with two examples.

Division ACANTHOPTERYGII GASTROSTEIFORMES.

Family **GASTROSTEIDÆ.**

110. Gastrosteus aculeatus, *L.* Stickleback.

Under this species are included, according to Dr. Day, six other varieties, the differences between them being too slight to constitute them into species.

The three-spined stickleback, or "Bandstickle," as it is called in Caithness, is common all round the Firth, both in salt and fresh water.

111. Gastrosteus pungitius, *L.* Ten-spined Stickleback.

112. Gastrosteus spinachia, *L.* Fifteen-spined Stickleback.

Caithness name—"*Horsefish.*"

Common among the shore pools both in Banffshire and Wick, in which latter place Mr. Peach has seen the nests both of this species and *G. aculeatus.* Dr. Joass had a specimen in the Aquarium at Dunrobin.

Division ACANTHOPTERYGII CENTRISCIFORMES.

Family **CENTRISCIDÆ.**

113. Centriscus scolopax, *L.* Trumpet-fish; Sea Snipe.

Division ACANTHOPTERYGII GOBIESOCIFORMES.

Family **GOBIESOCIDÆ.**

114. Lepadogaster gouanii, *Lacép.* Cornish Sucker.

115. Lepadogaster decandollii (*Day*). Connemara Sucker.

116. Lepadogaster bimaculatus (*Penn.*). Doubly-spotted Sucker.

A specimen is recorded by Day, *Brit. Fishes,* vol. i. p. 193, as having been taken at Lossiemouth, which was attached to a shell, and drawn up by a fisherman's line.

Division ACANTHOPTERYGII TÆNIIFORMES.

Family **TRACHYPTERIDÆ.**

117. Trachypterus arcticus (*Brünn*). Deal-fish.

Day, *Brit. Fishes,* vol. i. p. 219, says, under this heading: "1847, one 3 feet long, at Burghead, Moray Firth (Martin),

where Dr. Gordon (*Zool.*, p. 3460) alludes to the capture of two."

118. Regalecus banksii (*C. and V.*). Bank's-oar Fish.

In his *Brit. Fishes*, vol. ii. p. 260, Couch says of this fish: "Since the capture of the example of which we have thus given an enlarged account, three or four others have been met with along the north shores of the kingdom, the largest of which was obtained at Kiess, a few miles north of Wick, and consequently not far from the extreme north of Scotland. I am indebted for the few particulars known of it to Mr. Peach, who informs me that it measured 15 feet in length, and as being much injured about the head."

Also recorded by Mr. Day from the Moray Firth in his list of fishes of that place.

119. Regalecus grillii (*Lindr.*).

Order 2. ACANTHOPTERYGII PHARYNGOGNATHI.

Family LABRIDÆ.

120. Labrus maculatus, *Bl.* Ballan Wrasse.

Mr. Houstoun informs us that this species is found on the east coast of Sutherland. Mr. Peach remarks that it is not very common about Wick, while Edward says it is pretty frequent during summer on the Banffshire coast.

It is also recorded as a great rarity from Lossiemouth by Mr. J. Gatherer, Curator of the Elgin Museum, a specimen having been obtained from the local fishermen at Lossiemouth by him, as recorded in the *Elgin Courant* of March 25, 1887, at the same time with one of the next species.

121. Labrus mixtus, *L.* Cook Wrasse.

There is a specimen of the cook wrasse in the Dunrobin Museum, caught off there in September 1870. A specimen of the three-spotted wrasse, the female of the cook wrasse, is reported by Mr. Reid to have been taken at Wick in October 1870, and he remarks that it is very rare there. In May of the same year five cook wrasse are mentioned by the last-named gentleman as having been caught on haddock-lines in one day, and he also says that this was the first time they had been seen there. One is recorded as a rarity (and much rarer than the last species), as having been obtained from local fishermen at Lossiemouth by Mr. J. Gatherer, Curator of the Elgin Museum, in the *Elgin Courant* for March 25, 1887.

122. Crenilabrus melops (*L.*). Goldsinny; Baillon's Wrasse.

Both Edward and Martin record this species from the Moray Firth; the former says it is rare, while the latter says it is often met with.

123. Ctenolabrus rupestris (*L.*). Jago's Goldsinny.

One specimen obtained by Edward cast ashore on a winter's day.

124. Acantholabrus palloni (*Risso*).

125. Centrolabrus exoletus (*L.*). Small-mouthed Wrasse.

One specimen recorded by Edward from Troup Head.

126. Coris julis (*L.*). Rainbow Wrasse.

Order 3. **ANACANTHINI.**

Division ANACANTHINI GADOIDEI.

Family **GADIDÆ** (Cuv.).

127. **Gadus morrhua**, *L.* **Common Cod.**

Caithness people call a young cod "*Blockie*," the very small ones "*Coddies*."

Abundant all through the Moray Firth. The red-coloured inshore cod are looked upon by the Caithness people as a different species, and are called "*Redman Coddies*," or "*Blockies*."

128. **Gadus æglefinus**, *L.* **Haddock.**

Caithness name—"*Haddag*."

Very abundant. The Moray Firth haddocks have a great reputation for their good flavour; almost the staple fish on the east coast. Common in July and August in Loch Inver Bay, and of large size.

129. **Gadus minutus**, *L.* **Power Cod.**

"Abundant in the Moray Firth" (G. Harris, *Zool.*, 1854, p. 4261).

Mr. Peach says he never knew a name for this fish, and Mr. Reid writes us: "I know this fish now: it is called here 'Poor Cod,' a contraction of Power (?), I suppose. I have seen several specimens, but as they are so small a fish, our fishermen do not bring them to the market, except occasionally, as they are not got in any numbers.

130. **Gadus merlangus**, *L.* **Whiting.**

Abundant, but not nearly so much so as the haddock.

131. Gadus virens, *L.* Coal Fish.

"*Saithe,*" or "*Coal Saithe,*" "*Piltock,*" "*Sillock,*" "*Cuddy.*"

Abundant the year round; most commonly caught at that state of age when they are known as "Cuddies." Common on the cod-banks off the west coast, in the adult stage, where we have caught them with the leaden "murderer."

Mr. Peach says of this fish: "Very numerous, and gets a different name according to age. The adult fish spawns early in the year, say March. The first year's fish are called "Sillocks," corrupted into "Sillags"; from one to two years', "Piltocks," "Piltags"; two to four years', "Cuddies"; and after that "Saithe." In one or other of these stages these fish are to be found in every creek and bay on these northern coasts, especially where strong tides pass over or past seaweed-covered rocks. They are extremely voracious in all stages of their existence. A sillock will attack, kill, and try to swallow a whiting of its own size. It is a staple food of some of the coasters, eaten fresh, or dried without salt, when they are said to be "scraed." "Scraed" pillags are considered a delicacy.

132. Gadus pollachius, *L.* Pollack.

Common all round the Moray Firth, and the north and west coasts of Caithness and Sutherland, where it always goes by the name of Lythe. It seemed to us that the lythe of the north coast were more powerful than those of the west, and the remark is often passed that the strongest and best fish lay where the strongest tides run.

133. Gadus luscus, *L.* Bib; Pout.

Common on the Banffshire coast, but generally used for bait.

134. Gadus poutassou, *Risso.* Couch's Whiting.

135. Merluccius vulgaris, *Flem.* Hake.

Recorded by Day, *Brit. Fishes*, vol. i. p. 302, as found in the Moray Firth during July and August, following the herrings, hence probably the common name, "Herring Hake." Reported from the north coast by Mr. Crawford, and caught by us at Loch Inver on the long sea-lines. Very numerous some seasons; caught but not eaten by the Caithness people (Peach).

136. Phycis blennioides (*Brünn.*). Greater Forked Beard.

Edward says that on the Banffshire coast this fish is of rare occurrence, and that only at long intervals.

137. Lota vulgaris, *Cuv.* Burbot.

138. Molva vulgaris, *Flem.* Ling.

Abundant off the coast, though not so numerous as the cod. Common at Loch Inver, and caught by us on the long sea-lines.

139. Motella mustella (*L.*). Five-bearded Rockling.

140. Motella cimbria (*L.*). Four-bearded Rockling.

Mr. Peach informs us that these two species are not uncommon in the rock-pools near low tide.

141. Motella tricirrata, *Bl.* Three-bearded Rockling.

The young of this species have been taken by Edward on the Banffshire coast.

142. Motella macrophthalma, *Günth.*

143. Raniceps trifurcus (*Walb.*). Lesser Forkbeard.

Edward says that several have been known to have been taken off Banffshire (Day, *Brit. Fishes*, vol. i. p. 321). Mr. Peach also includes it in his Caithness list, on the authority of Mr. Anderson of the Antiquarian Museum, Edinburgh.

144. Brosmius brosme (*Müll.*). Torsk; Tusk.

Occasionally caught on the cod lines; becomes more numerous further north (Peach).

Mr. Reid says it has been brought in to Wick much more frequently of late years, since larger full-decked boats have been going 50 to 60 miles north-east of Noss Head to fish in the winter. Being a deep-sea fish, it rarely comes close to land, but has been caught by fishermen on the Minch, from Loch Inver, and we ourselves caught four in one day in July 1886, on the Stoir cod banks, in 40 fathoms of water.

Family **OPHIDIIDÆ**.

145. Ophidium broussonettii, *Müll.* Bearded Ophidium.

146. Fierasfer dentatus, *Cuv.* Drummond's Echiodon.

"In March 1863 I took the first specimen of this strange-looking fish I had ever seen. Since then, however, I have met with it several times, and always in winter,—save once, when I obtained it in summer. They were unknown in the Firth before. Specimens from here are now in the British Museum" (Edward).

147. Ammodytes lanceolatus, *Lesauvage.* Larger Launce.

One example of this fish is recorded from the Moray Firth, taken from the stomach of a cod (Day, *Brit. Fishes*, vol. i. p. 331).

148. Ammodytes tobianus, *L.* Lesser Launce.

Very common all along the east coast of Sutherland, especially at the sandbanks of the Little Ferry. Common at all suitable places on the west coast, such as Clach-toll Bay, at Loch Sandwood, and on the north at Balnakiel Bay, and Kyle of Tongue, where it is always in demand as spinning-bait for sea-trout.

Mr. Peach says that both these species are common in Caithness, where there is sand.

149. Ammodytes cicerellus, *Rafin.*

Division ANACANTHINI PLEURONECTOIDEI.

Family **PLEURONECTIDÆ.**

150. Hippoglossus vulgaris, *Flem.* Holibut.

Abundant, being more numerous and of a larger size on the north and west coasts of Sutherland. An enormous specimen was hooked by the "murderer" bait off Stoir Head in July 1883, but escaped after having been half into the boat. It twisted one gaff almost straight, and carried off every hook on the lead. We reckoned it at about 3 feet in breadth, and 5½ to 6 feet long. Another, captured a little further north in 1882, was sold in London for £4 sterling. The longest specimens are said to reach a length of 7 feet.

151. Rhombus maximus (*L.*). Turbot.

Not so abundant a species as the last. Mr. Crawford reports it from the north and north-west coasts of Sutherland, and Mr. Peach says it is occasionally got off Wick, where it is confounded with the preceding species.

152. Hippoglossoides limandoides (*Bl.*). Rough Dab.

Edward mentions that this species is rare off Banff.

153. Rhombus lævis (*L.*) Brill.

Rare in the Moray Firth.

154. Zeugopterus unimaculatus (*Risso*). Eckstrom's Topknot.

Mr. Peach mentions this as rare in Caithness.

155. Zeugopterus punctatus, *Bl.* Müller's Topknot.

Edward says that this species occurs at intervals along the whole coast-line.

156. Arnoglossus megastoma (*Donovan*). Sail Fluke.

Rare off Banff (Edward). Mr. Peach says it is not uncommon occasionally at Wick.

157. Arnoglossus laterna (*Walb.*). Scaldfish.

"This would appear to be another very scarce species with us. I have never met with it but in fish stomachs, and very seldom there" (Edward).

158. Pleuronectus platessa, *L.* Plaice.

Abundant.

159. Pleuronectes microcephalus, *Donovan.* Smear Dab.

Not very common.

160. Pleuronectes cynoglossus, *L.* Craig Fluke; Pole.

Rare.

161. Pleuronectes limanda, *L.* Common Dab.

Very common.

162. Pleuronectes flesus, *L.* Flounder.

Abundant; going some distance even up the rapid rivers of the east of Sutherland, as the Helmsdale, but is not known to us to ascend the rivers of the west coast of that county. Mr. Reid also informs us that they go a long distance up the Wick river.

163. Solea vulgaris, *Quinsel.* Sole.

"*Rock Sole.*" Not very common in the Moray Firth, certainly rare near the east coast of Sutherland, though it is taken all round the Sutherland and Caithness coasts.

Mr. C. W. Peach saw one 15 inches long that had been caught at Ackergill Bay, near Wick, on the 28th of January 1865. The rarity of this fine sea-fish in the market is perhaps only due to its scarcity on grounds which are easily trawled, the finest soles usually inhabiting sand amongst rocks, which cannot be trawled. This is the case even in the North Sea on certain rocky patches.

164. Solea lascaris, *Risso.* Lemon Sole.

Not uncommon off the east coast of Sutherland and Caithness; rare off Banffshire.

165. Solea variegata (*Donovan*). Lemon Sole.

"This species would appear to be met with occasionally" (Edward).

166. Solea lutea, *Bonap.* Solenette.

Taken out of the stomachs of cod by both Peach and Edward.

Concerning the flat fish, Mr. Reid says: "Since trawling commenced here a very few years since, I frequently boarded them on arriving in our harbour, and found a lot of, to me, new species of the flounder, skate, and ray tribe. I have seen on one of the trawlers, in one day, not less than ten to twelve different species of flounders, turbot, brill, plaice, rough and smooth dab, holibut, common flounder, skald fish, I believe, and pole fluke, and two or three sole-looking species (but not the true sole, which I could not make out), with numbers of what the English trawlers call "witches," a little flounder about the size of our common flounder, but thin, light-coloured, and nearly transparent. I think we have some eighteen species of British flounders, and by sharp looking after them we could claim for Caithness twelve to fifteen of them, I should think. Skate and ray are also well represented by the trawlers, I should say by six or eight species. These I did not examine minutely, they are so bad and dirty to handle; some of them were of very great size. I forgot one species of flounder, Müller's top-knot, and I think we have the whiff, variegated sole, and lemon sole."

Order **PHYSOSTOMI.**

Family **CYPRINIDÆ.**

Sub-family *CYPRININA.*

167. Cyprinus carpio, *L.* Common Carp.

168. Carassius vulgaris, *Nilss.* Crucian Carp.

169. Carassius auratus, *L.* Gold Carp.

170. Barbus vulgaris, *Flem.* Barbel.

171. Gobio fluviatilis, *Flem.* Gudgeon.

Sub-family *LEUCISCINA*.

172. Leuciscus rutilus (*L.*). Roach.

173. Leuciscus cephalus (*L.*). Chub.

174. Leuciscus vulgaris, *Flem.* Dace.

175. Leuciscus erythrophthalmus (*L.*). Rudd.

176. Tinca vulgaris, *Cuv.* Tench.

"A beautiful specimen was captured in the Moray Firth in the middle of June 1863; from whence it came and how it fared is a mystery" (Edward; Day, *Brit. Fishes*, vol. ii. p. 191).

177. Leuciscus phoxinus (*L.*). Minnow.

Inserted on the authority of Dr. Joass. In the Report of the Scotch Fisheries Improvement Association, 1884, it is stated that they "appear to be present in all the rivers and lochs of Scotland, with one exception (so far as can be gathered), that exception being Loch Awe." This appears to us a very sweeping assertion. We are not aware ourselves of the occurrence of this species in any river north of the Deveron in Banffshire, except the Spey, where it was introduced to a limited extent about the year 1883. We have no single record from any river running into the Moray Firth north of Inverness. Day's "throughout most of the north of Scotland" requires modification (*British Fishes*, vol. ii. p. 185). In twenty years we have never once met with the minnow anywhere in Sutherlandshire.

Sub-family *ABRAMIDINA*.

178. Abramis brama (*L.*). Bream.

179. Abramis blicca (*Bl.*). White Bream.

180. Alburnus lucidus, *Heckel and Kner.* Bleak.

Sub-family *COBITIDINA*.

181. Nemachilus barbatulus (*L.*). Loach.

182. Cobitis tænia, *L.* Spinous Loach.

Family **SCOMBROSCIDÆ.**

183. Belone vulgaris, *Flem.* Garfish.

Not common on the east coast of Sutherland, as reported to us by Mr. Houstoun; there is a specimen in the County Museum, taken at Brora in 1869. Mr. Peach, however, says they are often taken in herring-nets. One was taken on a sand-bank in Loch Eriboll by a man who was digging for sand-eels.

184. Scombresox saurus (*Walb.*). Skipper.

Rare on the Banffshire coast (Edward).

185. Exocœtus evolans, *L.* Flying Fish.

186. Exocœtus volitans, *L.* Greater Flying Fish.

Family **ESOCIDÆ.**

187. Esox lucius, *L.* Pike.

Used to occur at Loch Migdale, the only loch in Sutherland where it was found. Sheriff Mackenzie writes us he has never seen a specimen from this loch, so the species may have died out. They were introduced at least sixty years ago by the then Mr. Dempster of Skibo, and were caught in Loch Achilty, in the east of Ross-shire, by Peter M'Aulay, the keeper at Coul, for that purpose.

Mr. Peach says he just heard of one being caught in the Wick river.

Family **STERNOPTYCHIDÆ.**

188. Maurolicus borealis (*Nils.*). Argentine.

Recorded by Mr. Peach from Wick, and Edward says it is never absent during January from the Banffshire coast, where it is a regular winter visitant.

189. Argyropelecus hemigymnus (*Cuv.*).

Family **SALMONIDÆ.**

190. Salmo salar, *L.* Salmon.

Abundant, some years much more so than at others, the early run of spring fish depending on the mildness or severity of the winter; consequently the years 1882-3-4 are noted for the numbers of salmon caught early in the season.

The rivers Naver, Brora, and Helmsdale, in Sutherland, and the Thurso, in Caithness, are all early rivers, and clean salmon can be got in them in any month of the year, unless November, the principal spawning month, prove an exception.

Disease, we are sorry to say, has been very prevalent in the Brora and Helmsdale, commencing in 1882 on the Brora, and two years after on the Helmsdale. Some of the diseased fish were apparently "clean run" from the sea. Out of one small pool in the Upper Helmsdale twenty fish were taken with a net, and half of these were diseased; still, when the spawning season came round (1885), few diseased fish were seen, so it is to be hoped the worst is over. On the Brora even the trout and smolts were affected.

Salmon seem to keep to their own rivers even when two rivers join or run into one another. Thus the Berrie-

dale and Langwell rivers in Caithness join within 100 yards of the sea, yet the fish of the one river are rarely or never caught in the other.[1] Such, too, is the case with the Ainag river, which runs into the Oykel from the Ross-shire side; above their junction the Ainag fish, which have the reputation of being the best-shaped fish in the north, never pass up the Oykel.

In the western rivers of our district salmon run later, as they do also in all the smaller ones which hold these fish (the Forss perhaps being an exception), in the west the first heavy flood which comes, usually about the 10th to 15th July, bringing up great numbers. Some run in May, but very few are caught at that time. In July 1883 we rose a large salmon twice in the salt water at Loch Inver with a "silver doctor."

In two rivers with which we are intimately acquainted this lateness of the "run" has only been characteristic during the last ten to twenty years (speaking of west coast rivers), and there are good proofs and historical tests available which show *distinctly* that increasing lateness of the "run" from year to year in salmon rivers generally is indicative of gradual, or of all stages of, decline and approaching extinction. This is not theoretical, but based upon distinct data.

We have paid some attention to the history of certain salmon rivers—of Sutherland especially, and of north-west Ross-shire—and have given expression to our views on the subject of the changes which have taken place in these rivers regarding the times and seasons of the runs of salmon; but this is scarcely the place to enter into a discussion of this nature, which is better relegated to the columns of the *Field*, or to a special report. We will only direct attention to several articles in the September and October numbers of the *Field* for 1884, and to Mr. A. Young's "Report on

[1] The fish of the river Langwell were considered "the finest and best in Scotland" (*Agricultural Survey*, 1815).

the Rivers of the West of Scotland," who received a considerable part of his information from one of the writers as regards the rivers Gruinard, Inver, and Kirkaig, assisted by two other angling friends of greater experience, one of whom had known the former river for some ten or twelve years. The articles in the *Field* are signed "Three Ross-shire Midges," and "A Ross-shire Midge."[1] We have no reason to conceal their authorship, as we are firmly convinced that they contain points which can hardly be put aside.

191. Salmo trutta, *Flem.* Sea-Trout.

Abundant; rarely ascending the rivers before the end of May, though an undoubtedly clean one is at times caught by the nets in February and March.

The east coast sea-trout are generally much more spotted, and not such finely-shaped fish as those of the west coast. The sea-trout of the northern Kyles of Durness and Tongue are famed for their firmness and flavour, and readily take sand-eel as bait. In June and July 1883, before the rains set in and the fish could ascend the rivers, many sea-trout were caught in the salt water with sand-eel or small imitation minnow at Loch Inver, where they were scarcely ever known to have been caught before in the sea.

192. Salmo cambricus, *Donovan.* Sewin.

193. Salmo fario, *L.* Common Trout.

So many interesting varieties come under this heading that it would occupy too much of our space to go into particulars of each. We give the names of these below, and from the

[1] David Murray, Esq., Gruinard House, Aultbea; J. G. K. Young, Esq. of Glendoune, Girvan; and J. A. Harvie-Brown, Dunipace House, Larbert.

list it will be seen that Sutherland possesses all, or nearly all, that are known.

Scarcely a river in the east of Sutherland produces a trout possessing any edible qualities, probably from the generally stony nature of the streams, and consequent lack of food; but the lochs of the east almost all contain good red-fleshed and firm trout. In the west, amongst the limestone districts, the white-fleshed trout of the burns are most delicious eating, and so also are the trout of many of the lochs of Assynt, which are pink in flesh. The very dark red-fleshed trout of Gorm lochs are flabby and "out of season" in June and July, when ova are often found in them. We could say a great deal more in detail, but space forbids in this place.

Varieties of trout (*Salmo fario*) are as follows:—

a. *Salmo ferox*, Jard. and Selby. Great lake trout. General in the larger and deeper lochs, and even found in the shallow Loch Borrolan.

b. *S. cornubiensis*, Walb. Parr-marked trout. Lochan Sgearach, Reay Forest: above a fall of some sixty feet. Specimens caught in June 1883 ran three to the pound and larger. Strong and active. Parr-marks fade after death.

c. *S. estuarius*, Knox. Tidal trout. "Fossak" of Loch Inver. Ascends rivers only a limited distance, varying in different streams. Runs 2 to 5 lbs. weight; white-fleshed; coarse, rich food, if in season. Appears in May. Disappears in August. Strong.

d. *S. stomachicus*, Günth. Gillarroo trout. Loch Mulach Corrie, on the top of the Assynt limestone, and base of Ben More. Doubtful if this is separable from the Irish examples. Flesh pale pink; delicious eating; runs to 5 or 6 lbs. (rare) weight. Strong and active. Another trout, or the young of this, is

also found here, averaging 3 inches in length, with somewhat peculiar coloration; *not* apparently abundant. May be young of the other, but have the appearance of adult fish.

e. Crassapuil trout. Closely allied to *S. levenensis*, first described by Dr. F. Day, from examples forwarded by us from Durness.

Other remarkable varieties occur, most of which we believe are known to us; many of these inhabit very inaccessible and rarely visited lochs. Upon this subject we may have more to say at some future time.

In the Dunrobin Museum is a series of stretched skins of trout, collected by the late Mr. Young of Invershin, which are called crosses between trout and salmon, etc.

This collection might have been extremely valuable from a scientific point of view had the information been fuller and more carefully kept. As it is, we fear the specimens are worthless, unless any of the late Mr. Young's manuscripts are available and could be searched.

Regarding the Caithness trout Mr. Peach says: "Varying with every loch and burn according to whether the shores of the same loch be sandy, muddy, stony, or peaty; that is, the fish vary with every condition of situation, colour of water, amount of light, food, etc. The finest trout in Caithness are got from Lochs Watten and Scye. The fish in the former loch may have been sea-trout which have lost themselves in fresh water, like those of Loch Crassapuil in Durness (Sutherland) and Lochleven. Loch Scye is a small loch with sandy shores in the Reay country, near Loch Shurrery, and belongs to the Duke of Portland.

Many deformities of trout occur within the limits of our district, as elsewhere in Britain. Some of the more remarkable which we have obtained we have preserved in our collections. Such deformities are, in extremely isolated areas of water, permanent, and apparently so completely

hereditary that normal examples are rarely or never obtained; such are the *hump-backed* trout of a very isolated tarn of considerable depth, situated amongst the great hills of the Goberneasgach Deer Forest in Sutherland, which in all other respects are particularly vigorous and strong, and grow to a large size. The same variety—or deformity—we have often met with in less isolated areas. There "selection" chose the more normal shape; in the other case "isolation" produced the abnormal one.

Peculiarities, scarcely to be called deformities, are in a similar manner reproduced by "isolation"—such as "*b*" and "*d*" of our List (*S. cornubiensis*, Walb., and *S. stomachicus*, Günth.), or the wonderfully beautiful small trout of the upper waters of the Smoo Burn, near Durness, in which the scarlet and sealing-wax-coloured blotches are almost confluent along the medial line, and are largely and boldly shown. Yet it is not so many years ago that this stretch of river was devoid entirely of any species of *salmo*, or any variety of *fario*. This wonderful variety was produced by "isolation" in so short a period of time as eight years. Where selection has nothing to select from, isolation steps in, and a permanent variety is in many cases rapidly constituted.[1]

Other varieties appear to gain their ascendency, not by "isolation," but by extended range and change of habitat, such as the peculiar tidal trout, or so-called "fossak" of the Inver and other rivers, named *S. estuarius* by Knox—variety "*c*" of our List.

And yet another variety appears to gain specific distinction—I mean the so-called *S. ferox* or great lake trout —simply by the development of carnivorous inclinations growing great teeth and a big wide-mouthed head; losing

[1] We cannot here refrain from referring our readers to a little pamphlet by Mr. Charles Dixon bearing upon these interesting natural phenomena, entitled *Evolution without Natural Selection* (R. H. Porter: London, 1885), views we have long cherished, but dared not to express.

colour and brightness by living at greater depths, and further from the sun; changing in proportions and shape of the fins and tail, caused by the greater superincumbent body of water above, as it lives in deeper waters than its fly-feeding cousins nearer the surface.

The very anatomy changes, as in variety "*e*" of our list; and any one conversant with the marvellous changes and infinite varieties of *S. fario* already existent in New Zealand, or, as we are, conversant only with the fact as gathered from the late Dr. Arthur's and other New Zealand authors' papers, cannot fail to realise the vast power of isolation and natural selection.

194. Salmo fontinalis, *Mitchell.* American Brook Trout.

Introduced some years ago by his Grace the Duke of Sutherland, most of which were placed in Loch Brora, and a few in the Kintradwell burn; we doubt if many, or indeed any, of these are now left.

195. Salmo alpinus, *L.* The Charr.

Common in some of the lochs throughout the county of Sutherland, and probably inhabits others where its presence is yet undetected, as the charr rarely takes a fly in most of the lochs, though there are exceptions, as we have caught occasional ones in Lochs Merkland, Griam and Shin, and Lochs Borrolan, Urigill, Camaloch, Veyattie, Fewn, Assynt, and Brora, with fly, and more rarely with artificial minnow.

The isolation of the charr in certain lochs on the shoulder of Ben Hope, in Sutherland, is a subject distinctly deserving of the attention of naturalists, as indeed is the isolation of charr and trout in several other localities known to the writers of this account. Patient investigation of these

most interesting localities and their inhabitants could not fail to result in fresh discoveries of natural laws and their working. We throw out the hint, deeply impressed as we are with the assurance that there is plenty for every one to do, and that Nature's well is fathomless.

In Caithness the only loch known to us containing charr is Loch Calder. There it preserves its Gaelic name of *Tardearg* (or red-belly).

196. Osmerus eperlanus (*Flem.*). Smelt.

Mr. Peach informs us he has caught the smelt when fishing for sillocks. Edward says it is rare on the Banffshire coast.

197. Coregonus clupeoides, *Lacép.* Gwyniad.

198. Coregonus vandesius, *Rich.* Vendace.

199. Coregonus pollan, *Thomp.* Pollan.

200. Thymallus vulgaris, *Nilss.* Grayling.

201. Argentina syphrœna, *L.*

Edward has recorded a male full of milt taken near Banff in October 1876 (Day, *Brit. Fishes*, vol. ii. p. 138).

Family **CLUPEIDÆ**.

202. Clupea harengus, *L.* Herring.

Occurs along the east coast the whole year, but most abundant in the summer and early autumn; fish full of roe are taken in the early spring, but do not appear to have the fine flavour of the autumn herring. Abundant on the west

coast, but mostly fished from Stornoway. Ascends the sea-lochs of Glens Dhu and Coul, especially the latter, as well as other sea-lochs.

203. Clupea sprattus, *L.* Sprat.

An irregular visitant to the east and north coasts of Sutherland, though very abundant every year lower down the coast at the Beauly Firth. In the beginning of 1884 vast numbers were caught off Golspie and Brora, quantities being thrown ashore dead. Not known by us to occur on the west coast.

204. Clupea alosa, *L.* Allis Shad.

Taken at Invershin, 1870. Mr. Peach says that the very large herrings often heard of are of this species; he has often seen them. They also occur at irregular intervals in Loch Eriboll. On one occasion the loch was full of them.

205. Clupea finta, *L.* Twaite Shad.

A specimen recorded from Banffshire by Edward.

206. Clupea pilchardus (*Bloch.*). Pilchard.

Mr. Peach thinks this fish would oftener be observed were it not almost identical in size and shape with the herring. Mr. Reid says, "Very rare" (probably from the above-mentioned cause); I have only seen two or three specimens.

207. Engraulis encrasicolus (*L.*). Anchovy.

Mr. Peach had an article in the *John o' Groat Journal* of August 1860, on an anchovy caught at Wick.

Family **MURÆNIDÆ.**

208. Anguilla vulgaris, *Flem.* Eel.

Abundant in all the rivers and lochs of the east coast. About the middle of April the young eels, or elvers, as they are there called, begin to ascend the Brora in millions, the sides of the river the whole way up being black with them; they even ascend the Blackwater Falls at Balnacoil, by taking advantage of any damp inequalities of the rock; every trout caught at that time is gorged with them. They do not appear in the rivers of the west so early in the season as they do in the east, but by June all the lochs connecting with the Inver are full of them.

Caithness name—"*Tammy yaa*," or "*Yaa.*" Probably a corruption of the Scandinavian "Aal." I should fancy the Sharp-nosed, Broad-nosed Eel, and Snig are all varieties of one species (Peach).

Eels are very common in the sluggish rivers and lochs of Caithness. Large numbers migrate daily at Wick, from the fresh to the salt water and back. They leave the river just before dark and make their way to the harbour to feed on the garbage from the herring refuse thrown overboard there. They keep a regular course, which they invariably follow day after day. A long string or file of three or four deep continues for hours to pour out of the river into the bay, and thence into the harbour. The inhabitants disregard them, but they are a prize to the Norwegian sailors who frequent the port. These latter soon become acquainted with their singular habits, and come prepared with a peculiar instrument, made of a long pole, flattened like an oar-blade for two or three feet. Into one of the edges numerous straight pieces of barbed iron are driven so close together as to hold any unfortunate eel they may

come in contact with, the whole instrument looking like a gigantic comb. Armed with this, if I may call it, water-scythe, the Norwegians place their boat in readiness before the eels start on their nightly prowl, as they are quite certain that the fish will take their accustomed course. When the eels do make their appearance, the fishers keep moving the water across their line of swim, and three or four unfortunates are often secured at a single swathe. Nearly a barrel full of eels is sometimes caught thus in a single night. As they cannot all be consumed fresh, they are salted, and taken to Norway, where they are considered a great delicacy. Such eels as are able to run the gauntlet of half a dozen boats manned in this way return to the river before morning. Not only do the sailors know the habits of the eels, but the cormorants and other divers look out for them, and make them pay toll. It is amusing to see a cormorant with a large eel, the head of which has disappeared down its throat, but whose tail is tightly curled round the bird's neck. The swim being just behind the parapet of the North Pier, one has a good opportunity of watching the cormorants and other birds at work without being observed by those sharp-eyed wretches. A cormorant with a large flounder is even a more ridiculous object than one with an eel (Peach).

209. **Conger vulgaris**, *Cuv.* **Conger.**

Common; much more sought after of late years, as they command a ready sale and fair price. Delicious eating if properly cooked. We were present at a *table-d'hôte* where fourteen people all took a second helping, and pronounced them "delicious." In Caithness, however, Mr. Peach says they are often boiled for the cattle, pigs, and horses, and he thinks are never eaten by the natives.

210. **Muræna helena**, *L.* **Murry.**

Order 5. LOPHOBRANCHII.

Family SYNGNATHIDÆ.

211. Siphonostoma typhle (*L.*). Deep-nosed Pipe Fish.

Edward says it is not rare at Banff, and excellent as bait.

212. Syngnathus acus, *L.* Great Pipe Fish.

Recorded from the Moray Firth by both Edward and Dr. Gordon, and Mr. Reid has observed this fish at Wick.

213. Nerophis æquoreus (*L.*). Æquoreal Pipe Fish.

214. Nerophis ophidion (*L.*). Straight-nosed Pipe Fish.

Recorded from Banffshire (Harris; Day, *Brit. Fishes*, vol. ii. p. 263), and from Wick by Mr. Peach.

215. Nerophis lumbricifornis (*Willough.*). Worm Pipe Fish.

Observed by Mr. Peach at Wick.

Order 6. PLECTOGNATHI.

Family SCLERODERMI.

216. Balistes maculatus, *Gm.*

217. Balistes capriscus, *Gm.* File Fish.

Family GYMNODONTES.

218. Tetrodon lagocephalus, *L.* Pennant's Globe Fish.

219. **Orthagoriscus mola** (*L.*). **Sunfish.**

A specimen, now in the Dunrobin Museum, was caught off Golspie in 1880.

220. **Orthagoriscus truncatus** (*Retz*). **Oblong Sunfish.**

Recorded by Edward from Banff, and in August 1846 and October 1850 examples were taken in the Moray Firth and at Elgin. Mr. Reid sends a note of one taken in Thurso Bay in September 1878, and tells us he saw another dead one cast ashore the winter before. Of the former species he never saw but one. Mr. Peach mentions that three or four sunfish are caught every herring season rolled up in the nets. Has also been seen in Loch Eriboll.

Sub-class *CYCLOSTOMATA.*

Family **PETROMYZONTIDÆ.**

221. **Petromyzon marinus**, *L.* **Lamprey.**

Reported from the east coast of Sutherland, by Mr. Houstoun, as not rare.

222. **Petromyzon fluviatilis**, *L.* **Lampern.**

223. **Petromyzon branchialis**, *L.* **Small Lamprey.**

Mr. Peach records this fish from Caithness.

Family **MYXINIDÆ.**

224. **Myxine glutinosa**, *L.* **Hog Fish.**

Recorded from Banff by Edward. Also from Caithness by Messrs. Reid and Peach. Mr. Reid says: "Very rare; I have got two specimens in this place (Wick)."

Mr. Peach says: "Detested by fishermen, as it bores

into fish caught on the lines, and cuts out their flesh, leaving only the skin and bones; it also "slimes" up the lines like an eel. The fishermen, rather than touch it, cut off the snood, and let it drop overboard, so that they are seldom brought ashore."[1]

Sub-class 1. *LEPTOCARDI.*

Family **CIRROSTOMI.**

225. Branchiostoma lanceolata (*Pall.*). **Lancelet.**

Moray Firth (Day, *Brit. Fishes*, vol. ii. p. 366).

[1] Specimens of this species attacking other fish are often preserved along with their victims in Museums, and one may be seen in the collection of Mr. George Sim, naturalist, Aberdeen.



ERRATA.

Page 111, line 19, *for* 1885 *read* 1883.
Page 113, line 21, *for* Forss *read* Forse.
Page 117, line 13, *for* list *read* list of Messrs. S. & O.
Page 120, line 20, *for* in *read* by.
Page 129, line 27, *for* I *read* we.
Page 245, line 18, *for* again *read* also.
Pages 253 to 256, *wherever* Edwards *occurs*, *read* Edward.
Page 275, line 20, *for* pillags *read* Piltags.

The dividing line between the Sutherland and Caithness records has been omitted in the following cases: P. 110, under Chiff-chaff; p. 155, under Greater Spotted Woodpecker; p. 173, under Greenland Falcon; p. 185, under White-fronted Goose; p. 186, under Red-breasted Goose; p. 197, under Hooded Merganser; p. 229, under Sabine's Gull.

THE following title has been omitted on p. 6, and is entered here :—

Observations upon the Salmonidæ met with during an Excursion to the North-west of Sutherlandshire in June 1834. Sir William Jardine, Bart., F.R.S., M.W.S., etc. etc. 1834-35. (*Edinr. New Phil. Journal*, vol. xviii. p. 46.)

The species mentioned are—*Salmo salar*, *Salmo trutta*, *Salmo albus*, *Salmo eriox*, *Salmo ferox*, *Salmo fario*, *Salmo salmulus* or Parr, *Salmo alpinus*. (*See* also under species.)

APPENDIX A.

REWARDS and PREMIUMS offered by the UNITED ASSOCIATION OF THE NOBLEMEN, GENTLEMEN, AND FARMERS OF THE COUNTIES OF SUTHERLAND AND CAITHNESS FOR THE PROTECTION OF PROPERTY, ETC.

Premiums for the Destruction of Vermin.

1st. For the head and talons of each full-grown eagle killed within the county of Sutherland, or on the estates of Langwell and Sandside, in the county of Caithness, . . . *Ten shillings.*

2d. For the face and ears of an old fox killed within the bounds of the Association as above described, . . *One pound sterling.*
The head being cut off such fox while fresh, carried to a member of the Association, and certified by him.

3d. For the face and ears of a cub-fox killed within the bounds of the Association above described previous to the 1st of August (including all cubs found in the belly of their mother), *Seven shillings and sixpence.*
Such being certified as above mentioned.

4th. For the head and talons of each young eagle killed within the bounds of the Association before described, . *Five shillings.*
And for the egg of an eagle, . *Two shillings and sixpence.*

5th. For the face and ears of a wild cat, marten, or polecat, ditto, *One shilling.*

6th. For the head and talons of each raven, *One shilling and sixpence.*

7th. For the head and talons of each hawk, carrion-crow, or magpie, ditto, ditto, ... *Twopence.*

These Premiums will be paid for all vermin proven by oath to have been killed betwixt this date and the term of Whitsunday 1825, provided the claimants swear that they neither wilfully shot at, killed, or ran game of any description within the bounds of the Association during the period mentioned; and those who intend to claim any of them will require to attend at any of the meetings of the said Committee, which will be held at Golspie on the first Tuesday of August, December, and April next, when the marks of the killed vermin will then be received, destroyed, and paid for at the sight of the Committee.

(Signed) JAS. BRANDER,
Agent for the Association.

GOLSPIE, 26*th May* 1824.

GENERAL ABSTRACT.

VERMIN KILLED in the COUNTY OF SUTHERLAND, and on the Estates of LANGWELL and SANDSIDE, in the County of Caithness, and paid for by the SUTHERLAND ASSOCIATION FOR THE PROTECTION OF PROPERTY, from July 1819 to 17th August 1826.

PERIODS.	Old Eagles.	Young Eagles and Eggs.	Bitch Foxes in Milk.	Old Foxes.	Cub Foxes.	Wild-Cats, Martens, and Polecats.	Ravens.	Hawks.	Carrion Crows and Magpies.	Rooks and Jackdaws.	Premiums Paid.
From 6th July 1819 to 29th Mar. 1820,	64	12	14	46	40	132	253	141	383	259	£160 13 11½
From 29th Mar. 1820 to 28th Mar. 1821,	48	6	6	71	34	185	263	140	506	311	159 9 4
From 28th Mar. 1821 to 13th Mar. 1822,	58	5	1	37	30	132	256	159	390	288	194 14 3
From 13th Mar. 1822 to 24th Mar. 1823,	60	12	...	32	35	262	411	394	724	451	244 18 10
From 24th Mar. 1823 to 31st Mar. 1824,	16	5	...	33	44	137	286	102	302	490	137 19 10
From 31st Mar. 1824 to 18th Aug. 1825,	25	10	...	41	24	133	212	82	109	...	92 0 8
From 18th Aug. 1825 to 17th Aug. 1826,	24	10	2	33	23	157	281	97	233	...	126 1 6
	295	60	23	293	230	1143	1962	1115	2647	1799	£1115 17 4½

APPENDIX B.

SINCE we went to press we have gathered together a few more notes bearing on our subject, and as some of them are of importance, we thought it better to give them in the form of an Appendix than leave them out altogether.

There can be no doubt that much work still remains to be done in Caithness, our own opportunities of visiting that county having been few, owing to engagements elsewhere, and it is quite evident, even from a cursory inspection, that Mr. Osborne's notes, which form the great bulk of our Caithness materials, can be very considerably supplemented.

In regard to the so oft-quoted Sinclair collection, it has now been inspected both by Mr. E. Bidwell and ourselves: the whole of the birds are in a most dreadful state of dirt and moth; some few of the birds are labelled, others not; and, seeing that Dr. Sinclair was a very miscellaneous collector, it is quite open to doubt whether many of those said to be Caithness specimens are so. We noticed Australian and African species placed amongst the so-called Caithness collection: a sand grouse placed on a perch was labelled, "Sand Grouse, Siberia." There are *two* White's Thrushes, one labelled as mentioned in this work, the other not labelled: a pair of Capercaillie *sent to* Dr. Sinclair, and stuffed by Mr. Dunbar, are probably from Perthshire, a notice of these latter birds appearing in the *Inverness Courier* for 13th of June 1838. Taking all this into consideration, and that there is no catalogue, or any other record forthcoming, we can only hope that our work may be the last to quote this most unsatisfactory collection, unless, indeed, at some future time a proper catalogue should yet turn up, with every particular regarding these specimens in Dr. Sinclair's own handwriting. This collection certainly should serve as a warning to collectors for, and curators of, other county museums, to see that their specimens are duly numbered and entered into a book kept for that purpose, so that there can be no doubt whatever as to their identity, when occasion arises for any inquiry about them.

MAMMALS.

Meles taxus (*Schreb.*). Badger.

From 1877 to 1881 a keeper killed eight badgers in different parts of Sutherland, two at Garnsury near Ben Armine, one at Crakaig, and five at Glen Loth. It is to be hoped that the remnant, if any, may escape further persecution.

Felis catus, *L.* Wild Cat.

From 1877 to 1881 one keeper alone trapped twenty-two wild cats on different shootings in Sutherland. One specimen was trapped of late years, date uncertain, at Glencassley, but no traces of others have been seen there since. In March of the present year one was trapped at Kildonan, and sent to Mr. Macleay, Inverness, for preservation.

We are indebted to Mr. Macleay, Inverness, for a note of three wild cats sent in to him from Berriedale in 1880 to be stuffed.

Mustela putorius, *L.* Polecat.

We have received notes of a good many polecats trapped in different parts of Sutherland, and in 1881 one keeper killed eleven in Glen Loth. The last we have a notice of was trapped at Glencassley in the spring of 1885.

Martes abietum, *Ray.* Marten.

Rare as the marten now undoubtedly is, yet in the winter of 1886-7 several appeared in the Assynt country. One, a male, was shot at Duchally by the Glencassley keeper on November 27th, 1886; four were trapped by Kenneth Mackenzie, a shepherd, in Assynt, and still another was taken in Rhiconich.

Phoca grœnlandica (*Fabr.*). Harp Seal.

In a letter from Dr. Joass, Golspie, to Harvie-Brown, dated October 23d, 1886, he says:—

"Prof. Sir Wm. Turner pronounced a specimen which he

saw here in the Museum (Dunrobin) to be *Phoca grœnlandica*, young."

Arvicola amphibius (*L.*). Water-Vole.

A pied water-vole was killed at Glenrossal on October 3d, 1886.

Hyperoodon rostratus (*Chemnitz*). Common Beaked Whale.

In Dr. Joass' letter to Harvie-Brown just referred to (*vide* Phoca grœnlandica) he says Prof. Sir Wm. Turner referred a skull of a beach-driven dolphin from Brora to this species.

BIRDS.

Acrocephalus schœnobænus (*L.*). Sedge Warbler.

Heard by Buckley near Loch Stemster in June 1887.

Phylloscopus trochilus (*L.*). Willow Wren.

Heard by Buckley at Stemster in June 1887, and most probably occurs in all the patches of wood which generally surround the houses of the Caithness lairds.

Phylloscopus sibilatrix (*Bechst.*). Wood Wren.

Scarce, if not altogether absent in the Cassley Strath in 1885, the spring of that year being very cold and backward.

Troglodytes Parvulus, *Koch*. Common Wren.

Buckley heard the wren in the woods around Stemster House in June 1887.

Anthus trivialis (*L.*). Tree Pipit.

This species has increased very much about Glenrossal since it was first observed there in 1875, being quite numerous in the seasons of 1886 and 1887.

Chelidon urbica (*L.*) House Martin.

The house-martin breeds about Mr. Flower's farm-steading up the Cassley Strath, and has done so at least since 1885.

Fringilla montifringilla, *L.* Brambling.

In October or November 1876, large flocks of bramblings were seen in the birch trees at Assynt (Lord Clifton *in lit.* to J. A. Harvie-Brown, 30th December 1884). This appears to us as an unusual deviation from ordinary migrational routes.

Linota flavirostris (*L.*). Twite.

In the beginning of May 1887 several twites were seen about Badenloch by Buckley, and on the 17th of that month a nest with five eggs were taken by him out of a spruce tree, and the birds thoroughly identified by watching: this is the first time these birds have been known to breed in this district.

Sturnus vulgaris, *L.* Starling.

Starlings bred for the first time at Glenrossal in 1886, showing that this species is still extending its range.

Mr. L. Dunbar informs us that, although now so numerous, this bird was quite scarce about thirty years ago.

Pastor roseus (*L.*). Rosey Pastor.

In a letter to Harvie-Brown, Dr. Joass of Golspie informs us that about the same time that the Carral specimen mentioned in the body of this work was obtained, another was captured at the Meikle Ferry, but the bird having lost its tail during capture, he did not ask it for the Museum.

Pica rustica (*Scopoli*). Magpie.

Not uncommon along the Kyle of Sutherland; several are generally to be seen about the roadside between Invershin and Rosehall.

Corvus monedula, *L.* Jackdaw.

A colony of jackdaws have established themselves under the railway bridge that crosses the Kyle of Sutherland at Invershin.

Caprimulgus europæus, *L.* Nightjar.

A specimen was shot at Ribigill, near Tongue, in August 1878, and was sent in to Inverness for preservation.

Mr. Macleay, Inverness, informs us that he received a nightjar from Berriedale in 1880.

Picus major, *L.* Greater Spotted Woodpecker.

On the 12th of November 1886, Buckley saw a greater spotted woodpecker at Glenrossal.

Mr. Macleay received a bird of this species, shot at Berriedale in February 1887.

Coracias garrulus, *L.* Roller.

According to the *Zoologist*, the Dornoch specimen we have already mentioned appears to have been shot in the autumn of 1868.

Upupa epops, *L.* Hoopoe.

"A Hoopoe was shot at Durness about a fortnight ago and sent to Mr. Macleay, Inverness, for preservation," *vide Northern Chronicle*, 26th May 1886. This bird was seen by Buckley just after it had been set up.

Strix flammea, *L.* Barn Owl.

A barn owl was shot in the Reay forest in April 1879, and was considered very rare at that time.

Otus brachyotus, *L.* Short-eared Owl.

In a letter dated November 4th, 1886, Mr. H. Griffith, writing from Montpellier Lodge, Brighton, says :—"I had intended to men-

tion that I found the nest and eggs of the short-eared owl in Sutherlandshire this year. I do not know whether it has been recorded before."

Mr. Griffith gives no date or locality, but the occurrence is very interesting on account of its rarity.

Aquila chrysætos (*L.*). Golden Eagle.

This species, we are glad to say, still breeds in the eastern locality we have referred to before, and this year (1887) we have discovered still another breeding-site, so that we may almost call the golden eagle a common bird.

In the winter of 1886-7 golden eagles were very troublesome at Glenrossal, soaring over the woods, and dispersing every head of black game. This happened constantly, and so bold were the eagles that on one occasion one made a pounce on a tame duck, and was only prevented from catching it by a man who was working in a shed near the place, who, on observing the commotion, came out and drove the bird off. At another time a golden eagle came within forty yards of the front door at Glenrossal.

Buckley also saw one of these birds trying to balance itself on the top of a small birch tree, and this took it some time to do. We mention this fact, as eagles do not often sit in trees in this country.

Haliætus albicilla (*L.*). White-tailed Eagle.

Mr. H. M. Wallis, of Reading, who has had a good deal of experience amongst the Sutherland eagles, informs us that, in his experience, the white-tailed eagle is not common in that county. He continues:—"The two eyries which were shown me were deserted before 1875. I don't think they bred on or frequented Handa between 1875 and 1881."

A white-tailed eagle was killed at Eriboll in April 1862.

Pernis apivorus (*L.*). Honey Buzzard.

When in Thurso in June of this year (1887), Buckley called on Mr. L. Dunbar, and was shown by him a very fine specimen of

a female honey buzzard which he had just set up. It was shot on or about June 18th at Shurrery by R. M'Nicol, the keeper there. Her breast was quite bare, and she had all the appearance of a sitting bird. M'Nicol wrote Mr. Dunbar :—"I will try to find the nest and get the cock, but I do not think her nest is about here. The gulls drove her into the wood three times before I got a shot at her." This is a very unusual date for a honey buzzard to be seen unless she was breeding. We know where they do breed, or have bred; not a very great distance from the limits of our present area.

Falco candicans (*Gmel.*). Greenland Falcon.

In a letter to Harvie-Brown, dated December 20th, 1882, Lord Clifton mentions that a large white falcon with black-tipped wings was seen on Loch Shin, presumably about that date, and he referred it to this species. In the same year a Greenland falcon was shot at Caen, near Helmsdale, and came into the possession of Mr. Hill, the banker there.

Falco islandus (*Gmel.*) Iceland Falcon.

Mr. L. Dunbar informs us that on 6th October 1887 a fine male Iceland falcon was killed near Thurso.

Anser cinereus (*Meyer*). Grey Lag Goose.

In 1876 and again in 1881 grey lag geese bred on Eilean Fiag, in Loch Shin, and also on an island in Loch Urigill.

In the spring of 1887 these geese appeared at Badenloch in February; a very early date. There were in all about thirty birds. We are sorry to add that two nests were found, close to one of which the old bird was lying dead, and the other, containing three eggs, was taken by ourselves, having been deserted from some cause or other. We may add that the lessee of the farm and shootings where the geese mostly breed is very particular that they shall not be disturbed more than can possibly be helped.

Anser albifrons (*Scop.*). White-fronted Goose.

A white-fronted goose was shot at the Battery Park, near Helmsdale, on March 15th, 1887, and brought the next day to Mr. Hill, the banker. It appeared to be a solitary bird, and weighed 5½ lbs. Mr. Hill kindly sent the head to Buckley, who preserved it. This seems to be the first time this bird has occurred in Sutherland.

When in Thurso in June 1887, Mr. L. Dunbar informed Buckley that the white-fronted geese were common at Strathmore, and bred there. On further inquiry, however, it appeared that those that bred were pinioned birds, so probably they were originally bred from slightly wounded birds.

Bernicla brenta (*Pall.*). Brent Goose.

In a letter from Mr. Swanson of Rispond to Mr. Houstoun, dated January 15th, 1887, he says:—

"In reply to yours of to-day, the bird you saw described in the papers as having landed at Rispond, and been domesticated by me, is the brent goose. I think it answers the description of that bird given in the library here (Thurso). It has a black head and neck, dark-grey body, web-footed, and rather larger than a duck, but not so big as a wild goose.

"We caught it and clipped one of its wings, and since then it goes with the ducks, and is as tame as any of them. Its principal meat is grass. I never saw one of the kind before."

An adult male was killed off the Caithness coast in February 1885, as we are informed by Mr. E. S. Cameron of Barcaldine.

Dafila acuta (*L.*). Pintail.

Mr. E. S. Cameron of Barcaldine informs us that an adult male pintail was killed off the Caithness coast in February 1885.

Mareca penelope (*L.*). Widgeon.

On September 27th, 1886, a son of Sheriff Mackenzie shot some

widgeon on the Dornoch Firth, which, he informs us, is nearly a fortnight earlier for their appearance than usual.

As regards this species breeding in Caithness, Mr. E. S. Cameron informs us he has a nestling bird stuffed, which came from that county.

Fuligula ferina (*L.*). Pochard.

Mr. Wallis informs us that he saw a drake of this species on Loch Urigill in May 1881.

Mr. Macleay, Inverness, has stuffed two specimens from Sutherland. One, shot in March 1878, is in the Dunrobin Museum; another was obtained at Durness in 1882.

Fuligula cristata (*Leach*). Tufted Duck.

Obs.—In June 1887 Buckley put up one or two birds out of some reeds in a Caithness loch, which he thought were of this species; he also found some nests (one of which contained about sixteen eggs) but the ducks had been frightened off their nests previously, and unfortunately not having brought a telescope with him, he was unable to identify the species, which might easily have been done by watching for the males.

Columba livia, *Bonnat.* Rock Dove.

On the 29th June 1886 Buckley saw three undoubted wild rock doves up the Cassley Strath, on a piece of land that had just been prepared for turnips.

Columba oenas (*L.*) Stock-Dove.

Buckley, while shooting wood-pigeons at Kintradwell on September 22, 1887, shot a specimen of the stock-dove. We have this season been informed by one of our correspondents of the nesting of this species on the Morayshire coast, showing how rapidly it is extending its range.

Phasianus colchicus, *L.* Pheasant.

During the winter of 1885-6 a cock pheasant lived in the whins

and small trees at the plate-layer's house near Achintoul, not very far from the Sutherland and Caithness March, and used to come and feed daily with the fowls there; this is one of the bleakest spots in that very open and bare district.

Mr. Henderson of Stemster informs us that at one time he introduced a few pheasants near his house, but that they gradually disappeared.

Coturnix communis (*Bonnat*). Quail.

Two quails were obtained at Helmsdale in November 1879. Mr. Macleay, Inverness, further informs us that the late Mr. R. Reed of Balnakeil took the eggs of this bird near Tongue.

Lagopus mutus, *Leach.* Ptarmigan.

During the severe weather of December 1886, some ptarmigan were seen on the low hills opposite Glenrossal in the Cassley Strath; this is a very great distance from their nearest breeding ground, the Ben Mhor range.

Rallus aquaticus, *L.* Water-Rail.

A water-rail was seen at Glenrossal on the 13th of November 1886, a most unlikely spot for this bird.

Porzana maruetta (*Leach*). Spotted Crake.

A specimen of this bird was shot at Rosehall in September 1879, by Mr. Musgrave, as Mr. Macleay, Inverness, informs us.

Himantopus candidus, *Bonnat.* Blackwinged Stilt.

Obs.—Mr. Macleay, Inverness, has an entry in his ledger of a bird of this species shot at Brora in July 1855, which had been sent to Mr. Snowie to be stuffed. It belonged to a Mr. Essington who fished the Brora for many years. At his death his collection of birds was sold, and we have been unable to trace this specimen. Being such a rare bird, especially in the north, we have entered it as an "Obs.," in case the species was wrongly identified.

Tringa canutus, *L.* Knot.

Mr. Macleay informs us he had a knot sent him from Inverpolly in August 1882, for preservation.

Calidris arenaria (*L.*). Sanderling.

In May 1885 a sanderling was sent from Inverpolly to Mr. Macleay, Inverness, for preservation.

Totanus glottis (*Pall.*). Greenshank.

Buckley heard a greenshank flying over Glenrossal on the 1st of November 1886 ; its late departure was probably owing to the very fine open autumn of that year, as no snow had appeared by that time even on Ben Mhor. As showing the fineness of the season, ants were observed working busily on the date referred to.

Numenius phæopus (*L.*). Whimbrel.

Several whimbrel were heard and seen flying over Badenloch, evidently on migration northwards, in May 1886 and 1887.

Stercorarius parasiticus (*L.*). Buffon's Skua.

In Sir William Milner's collection there is a specimen of this bird said to have been killed near Bonar Bridge in the winter of 1846-7.

Mr. Macleay, Inverness, has an entry in his ledger of a Buffon's skua sent from Lochinver by a Mr. Kortwright on October 23d, 1862.

FISH.

Salmo fario, *L.* Common Trout.

Mr. Henderson of Stemster informs us that about thirty years ago it was an accepted fact that trout would not rise on Loch Stemster, or at least so rarely, as to make the loch not worth fishing, whereas now they rise well on favourable days. This

seems a fact worth recording. Mr. Henderson could not give us even any conjecture why this change should have taken place.

Regarding the stocking of the lochs near Dunnet Head with trout, Mr. John Gunn of the "Challenger Expedition Office" writes us:—

"I got a friend to apply to Mr. Brims, factor for Rattar, who says that the present Mr. Traill of Rattar put trout into the loch nearest the lighthouse, some four or five years since, the fry being taken from various lakes throughout Caithness. Mr. Traill's brother lately fished this loch with fair success, a few of the trout being upwards of ½ lb. in weight." May 21st, 1887.

INDEX.

In Preparation.

A VERTEBRATE FAUNA OF THE OUTER HEBRIDES

(*Uniform with this Vol.*)

BY

J. A. HARVIE BROWN, F.R.S.E.,
MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

ASSISTED BY

T. E. BUCKLEY, B.A., F.Z.S.,
MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION.

Subscribers' Names received by
DAVID DOUGLAS, 15 CASTLE STREET, EDINBURGH.

Agricultural Survey of Caithness, 96.
Agrostis vulgaris, 31.
Ainag, river. *See* Ænaig.
Alauda arvensis, 143.
Alca impennis, 62, 239; *torda*, 62, 239.
Alcedo ispida, 156.
Alopecias vulpes, 253.
Alopecurus pratensis, 31.
Alston, Edward R., *On the Mammals and Reptiles of Sutherland*, 7; *Fauna of Scotland*, 7; on the mole, 71; on the
Anthoxanthum odoratum, 31.
Anthus obscurus, 118; *pratensis*, 117; *trivialis*, 118, 304.
Anthyllis vulneraria, 31.
Aquila chrysætos, 167, 307.
Arbuthnot's *Account of Peterhead* (1815), 5.
Archibuteo lagopus, 166.
Arctic tundra, reference to, 33.
Ardea cinerea, 181.
Ardvrak Castle, vii; osprey at, *Plate*, 177.

INDEX.

Aardvaar (or Ardvar), 40; sheep of, 50; white-tailed eagle breeding in, 169; grouse rare in, 204.
Aberdeen, white whale forwarded to, 85.
Acanthias vulgaris, 254.
Accentor modularis, 112.
Accipiter nisus, 170.
Acerina cernua, 258.
Achany, rough-legged buzzard at, 166; hobby shot at, 175.
Achavarasdale, merlin shot at, 176; pintail shot at, 190; ruff shot at, 221.
Achillea millefolium, 31.
Achinduich, albino white-tailed eagle killed at, 169.
Achintoul, snowy owl killed at, 162; pheasant at, 310.
Achumore, wolf killed at, 65.
Accipenser sturio, 257.
Ackergill, 54, 55; redstart at, 107; great grey shrike at, 119; martin breeds near, 123; lesser tern near, 228.
Ackergill Bay, basse caught in, 258; sole caught in, 280.
Ackergill Tower, 2.
Acredula rosea, 113.
Acrocephalus schœnobœnus, 112, 304.
Actitis hypoleucos, 222.
Adder, 247.
Aegialitis hiaticula, 213.
Ænaig (Ainag, Eanaig, Einaig), the river, 29, 41; salmon in, 285.
Agricultural Survey of Caithness, 96.
Agrostis vulgaris, 31.
Ainag, river. *See* Ænaig.
Alauda arvensis, 143.
Alca impennis, 62, 239; *torda*, 62, 239.
Alcedo ispida, 156.
Alopecias vulpes, 253.
Alopecurus pratensis, 31.
Alston, Edward R., *On the Mammals and Reptiles of Sutherland*, 7; *Fauna of Scotland*, 7; on the mole, 71; on the mammals of Sutherland, 72; on the redstart, 106; on the siskin, 125; on the lizard, 248; records the great-crested newt, 250; on palmated newt 251.
Altnaharrow, 60; firs at, 42; stone-chat at, 105; redstart at, 106; wood-wren at, 111; swallow seems absent from, 122; house-sparrow common at, 127; chaffinch at, 129; yellowhammer at, 136; skylark common at, 144; snowy owl obtained at, 162; Iceland falcon taken at, 173; Bewick's swan shot at, 187; nest of widgeon got at, 191; ring-dove seen at, 198; black-game at, 205; water-rail seen at, 207; red-necked phalarope at, 216.
Ammodytes lanceolatus, 277; *tobianus*, 278.
Ampelis garrulus, 120.
Anas boschas, 188.
Anarrhichas lupus, 268.
Anchovy, 292.
Anderson, Dr. Joseph, 68; *Notice of the Brochs of Yarhouse, etc.* (1871), 68.
Anderson's *Guide to the Highlands*, etc., (1863), 8.
Angler, the, 243, 264.
Anguilla vulgaris, 293.
Anguis fragilis, 249.
Anser albifrons, 185, 309; *brachyrynchus*, 185; *cinereus*, 183, 308; *segetum*, 185.
Antenaria dioica, 31.
Anthoxanthum odoratum, 31.
Anthus obscurus, 118; *pratensis*, 117; *trivialis*, 118, 304.
Anthyllis vulneraria, 31.
Aquila chrysœtos, 167, 307.
Arbuthnot's *Account of Peterhead* (1815), 5.
Archibuteo lagopus, 166.
Arctic tundra, reference to, 33.
Ardea cinerea, 181.
Ardvrak Castle, vii; osprey at, *Plate*, 177.

Aricline, Loch, rabbits at, 95.
Argentina syphræna, 291.
Argentine, 284.
Arenaria serpylliflora, 31.
Argyll, 61; faunal area of, 59.
Armadale, common gulls near, 231.
Armeria maritima, 31.
Arnoglossus laterna, 279; *megastoma*, 279.
Artemisia absinthium, 31.
Arvicola agrestis, 93; *amphibius*, 92, 304; *glareolus*, 93.
Aschoil, brambling killed at, 129.
Ash, rook builds on, 149.
Asio accipitrinus, 160.
Asplenium marinum, 31.
Assynt, mountains of, 28; limestones of, 31; marble of, 32; parish of, holds 300 lochs, 33; birch woods of, 42; wolf killed in, 65; water shrew in, 73; wild-cat in, 75; fox in, 76; marten in, 77; otter in, 79; badger in, 80; afforested ground of, 87; water-vole in, 92; hare rare in, 94; ring-ouzel in, 101; wheatear in, 103; hedge-sparrow in, 112; greenfinch in, 126; skylark in, 144; hooded-crow in, 147; record of ravens in, 151; nightjar unknown till 1875 in, 154; short-eared owl in, 160; buzzard rare in, 166; white-tailed eagle breeding in, 169; merlin in, 175; osprey seen in, 178; widgeon not recorded in, 191; pheasant introduced to, in 1869, 201; grouse killed in, 204; woodcock common in, 217; redshank common in, 223; adder rare in, 247; brambling in, 305.
Athene noctua, 163.
Atriplex hastata, 31.
Auk, great, 62, 239; little, 241.
Auld, George, druggist, Wick, 133.
Ault-an-oul, 36.
Aultnagealgach, 14, 35, 40, 41, 56, 59; lizard about, 248.
Aultnatore, 66.
Auxis rochei, 263.
Avocet, 215.
"Awpie," 240.

Badcall Bay, whimbrel observed in, 225; Islands, 37, 40; brown rat in, 92; song-thrush in, 98; starling abundant on, 144; colony of cormorants on, 178; purple sandpiper on, 220; common tern shot near, 228; lesser black-backed gull on, 233; stormy petrel nesting on, 237; black guillemot breeds on, 241.
Badger, 80, 303.
Badenloch, 15, 27, 60; hedge-sparrow at, 112; twite at, 131; reed bunting at, 137; swift seen at, 153; greylag goose at, 183; partridge at, 201; ringed plover at, 213; twites seen about, 305; whimbrel seen at, 312.
Baikie, on the track of the field vole, 93.
Balœnoptera minor, 84; *musculus*, 83; *borealis*, 84; *rostrata*, 84; *sibbaldii*, 84.
Balblair Wood, crossbill nests in, 22; waxwing shot at, 120.
Ballantra, 146.
Balnacoil, 129; sparrow breeding at, 127; linnet breeds at, 130; starling at, 144; rook driven from, 148; ravens near, 151; tawny owl breeds near, 161; honey-buzzard killed at, 172; black scoter near, 195; little gull at, 231; pomatorhine skua seen at, 235; eel at, 293.
Balnakeil, little grebe breeds near, 246; Bay, lesser launce in, 278.
Banff, 61, 83; hammer-headed shark from, 253; grey notidanus in Museum of, 254; small-spotted dog-fish taken off, 254.
Banffshire. *See* Edward.
Bank's oar fish, 272.
Bantock, keeper at Dunrobin, 110, 169; on heronry near Golspie, 181.
Barbastelle, 70.
Barcaldine (Argyllshire), bernacle goose preserved at, 186.
Barnyards, cole tit at, 114.
Barra Head and its Bird Life, 240 note.
Barrock, rookery at, 151.
Barrogill Castle, 2, 54; song-thrush at, 99; blackbird at, 101; redbreast at, 108; willow wren at, 111; attempts at a rookery there, 150; snowy owl preserved at, 163; stuffed albino hen-harrier at, 165; merlin shot at, 176; black game from, 206.
Bartramia longicauda, 222.
Basse, 258.
Bat, long-eared, 70.
Battery Park, Helmsdale, white-fronted goose shot at, 308.
Beauly Firth, sprat at, 292.
Beaver, 66; European, 91.
Bee-eater, 157.
Beg, Strath, 56.

Bell, Prof. T., 84; his *British Quadrupeds* (1874), 7; on water-shrew, 73; on white whale, 85.
Bellis perennis, 31.
Belone vulgaris, 283.
Beluga, 85.
Ben Arkle, 30.
Ben Armine, 1, 23, 60; peregrine falcon at, 174; shoveller found dead at, 189; ptarmigan scarce on, 203.
Ben Braggie, 22, 24.
Ben Clibrick, 1, 23, 155; ptarmigan scarce on, 203; dotterel on, 211.
Ben Coul Beg, 28.
Ben Coul More, 28.
Ben Chaoran (also called Ben Harran), meaning of, 17; 30, 60; wheatear at summit of, 103; ptarmigan on, 203; sandpiper in old pass over, 222.
Ben Griam, Little, 87.
Bens Griam, 23; mountain hare on, 94; rabbits on, 96; ptarmigan disappears from, 203.
Ben Hee, 30, 59, 60; white-tailed eagle bred on, 169.
Ben Hope, 28, 30, 36; mole near, 71; eggs of merlin from, 175; charr in Loch on, 290.
Ben Horn, 24; ptarmigan seen on, 203.
Ben Laoghal (Loyal), 30, 66; ring-dove at, 198.
Ben Mohr—Coigach, 28.
Ben More—Assynt, 30, 34, 59; hedge-sparrow at, 112; reed bunting at, 137; ptarmigan on, 203.
Ben Rossal, 60.
Ben Smeorale, 24.
Ben Spionnaidh, 30.
Ben Stack, 30, 42, 59.
Ben Uarie, 24; ptarmigan now absent from, 203.
Ben Uidhe (Uie), 30, 34; ptarmigan on, 203.
Ben Vaddu, 60.
Ben a Veallich, 24.
Bergylt, 260.
Berneray, 48.
Bernicla brenta, 185, 309; *leucopsis*, 186.
Berriedale, 2, 16, 45, 53, 54, 75; roe-deer at, 89; squirrel possibly in, 90; missel-thrush breeds at, 98; song-thrush seen at, 99; water-ouzel in, 103; grey wag-tail at, 117; martin at, 124; bullfinch at, 133; nightjar at, 154; rough-legged buzzard often seen at, 167; eagles at, 168; Greenland falcon trapped at, 173; kestrel at, 177; pheasant abundant at, 201; black game at, 206; black game spreading from, 205; woodcock breeds at, 217; greater spotted woodpecker shot at, 306.
Berriedale, the river, 17, 19, 56; salmon in, 284.
Berwick, bittern, range of, 182.
Berwickshire, knot in, 220.
Bettyhill, long-tailed titmouse at, 113; common bunting seen at, 135; nest of heron at, 181; partridge at, 202; grouse scarce about, 204; black-headed gull breeds near, 230.
Bib, 275.
Bidwell, E., on White's thrush, 100; honey-buzzard inspected by, 172; inspects Dr. Sinclair's collection, 302.
Bighouse Bay, rookery at, 149.
Bittern, 182; American, 182.
Black's *Guide to Scotland*, 8.
Blackbird, 100.
Blackcap warbler, 108.
Black fish, 262.
Black-tailed godwit, rarity of, in Scotland, 225.
Blackwater, the, 24; buzzard's nest beside, 165; eel ascends falls of, 293.
Blennius galerita, 269; *gattorugine*, 268; *pholis*, 269.
Blenny, gattoruginous, 268; Montagu's, 269; viviparous, 269; Yarrell's, 269.
Blow-holes, 47, 51.
Blue tit, 115.
Boathaven, basking shark at, 253.
Bonar Bridge, 14; whitethroat at, 108; long-eared owl at, 160; marsh harrier said to have been shot at, 164; red-necked phalarope seen near, 216; green sandpiper killed at (1844), 222; Buffon's skua killed near, 312.
Bonito, plain, 263.
Booth, observes swifts near Durness, 153; on sparrow-hawk in Sutherland, 171; on the shoveller, 189; on the goosander, 195; water-rail seen by, at Lairg, etc., 207; on red-necked phalarope, 216; on great black-backed gull, 233.
Borgie, sand-martin on the, 124.
Bos longifrons, 67, 68; *taurus*, 89.
Botaurus lentiginosus, 182; *stellaris*, 182.
Bottle Island, 30.
Braebag, 59, 70; ptarmigan on, 203.
Braemore, 88; merlin shot at, 176.

Brama raii, 262.
Brambling, 129, 305; 1860-61 famous for, in Scotland, 130.
Branchiostoma lanceolata, 297.
Brander, James, 300.
Brawl, 16 note [2]; missel-thrush breeds at, 98; rooks at, 149; sparrow-hawk at, 171; merlin shot at, 176; bean goose shot at, 185; redshank at, 223.
Brawl Castle, 44, 54; red-deer heads in, 88; starling abundant at, 145; rooks persecuted at, 150; goshawk preserved at, 170; sparrow-hawk at, 171; merlin shot at, 176; great snipe preserved at, 217.
Bream, black sea, 259; common sea, 260; Ray's sea, 262.
Brill, 279.
Brimms Ness, 46.
Brims, Mr., factor for Rattar, 313.
British Museum, eagle (epauletted) in, from Berriedale, 168; nest of black-throated diver in, 244; Caithness sperm whale in, 85; Drummond's echiodon in, 277.
"Brochs," 62, 66.
Brora, 21, 26; pied flycatcher near, 121; eagles captured near, 167; swans on loch, 186; quail at, 202; sanderling seen at, 221; lesser tern at, 228; doree taken at, 262; garfish taken at, 283; sprat caught off, 292; black-winged stilt shot at, 311.
Brora Strath, starling in, 144; slow-worm in, 249.
Brora, the river, 24; frequented by otters, 79; great northern diver from, 243; salmon in, 284; eel in, 293.
Brosmius brosme, 277.
Brough, 48.
Brown, Alex., short-eared owl with, 161.
Brown, on Greenland shark, 255.
"Brulochans," 24, 44.
"Brumple," 269.
Buachaille, 37.
Bubo ignavus, 163.
Buchan, Bullers of (Aberdeen), 40.
Buchan, fishes of, 5.
Buchanan-White, Dr., of Perth, his faunal areas, 59.
Buckie, angel fish caught by fishermen of, 255.
Buckley, *On the Birds of the East of Sutherland*, 7.
Bufo vulgaris, 251.
Bulgie Island, 37; brown rat absent in, 92; kittiwake roosts on, 234.
Bullfinch, 129, 132.
Bullhead, four-horned, 265; river, 265; short-spined sea, 265.
Bunting, black-headed, 135; common, 135, 144; reed, 137; snow, 137; note on the nesting of snow-bunting, by L. N. Hinxman, 140; feeds on *Saxifraga oppositifolia*, 143; tawny, 130.
Burghead, deal-fish at, 271.
Bustard, little, 209.
Buteo vulgaris, 165.
Butter-fish, 269.
Buzzard, common, 165; honey-, 172, 307; rough-legged, 166.
Byne, Mr., 135.

Cadell, H. M., *The Geology of Sutherland*, 5.
Caithness, Earl of, 2, 50, 54; useful map of, 5; Guide-books to, 8; birds killed in and preserved by Mr. L. Dunbar, Brawl, 7; coast-line of, 13; area of, 16; Gaelic names in, 17; rivers of, 19; physical features of, 43; pavement of, 45; faunal position of, 59; ill adapted for deer, 88.
Calda Burn, red-throated diver on, 245.
Caledonian Zoology, 248.
Caen, Greenland falcon shot at, 308.
Calidris arenaria, 221, 311.
Callionymus lyra, 268.
Calluna vulgaris, 31.
Caltha palustris, 142.
Calva Island, grey-lag goose now absent from, 184.
Cambridgeshire, sparrow in (reference to), 127.
Cameron, E. S., of Barcaldine, on brent goose, widgeon, and pintail, 309.
Canis familiaris, 67, 69; *lupus*, 69, 76; *vulpes*, 67, 69.
Canisbay, 2, 49, 51 *note*, 53, 88; turtle-dove shot near, 200.
Canisp, 28, 31, 33.
Cantharus lineatus, 259.
Cape Wrath, 30, 32, 59, 60, 82; missel-thrush perhaps bred at, 97; ravens at, 151; white-tailed eagle near, 168; migration schedule from, 174; record of gannets at, 180; golden plover common at, 212; dunlin common near, 218; kittiwake breeds near, 234; stormy

petrel at, 237 ; adder common about, 247.
Capercaillie, 206.
Capra hircus, 67, 68.
Capreolus caprea, 89.
Caprimulgus europæus, 154, 306.
Capros aper, 261.
Caranx trachurus, 261.
Carcharias glaucus, 252.
Carduelis elegans, 124 ; *spinus*, 125.
Carduus arvensis, 31.
Carelophus ascanii, 269.
Carnack, the, 26.
Carral, 145.
Carron, the (Sutherland), grey phalarope seen near, 216.
Carron Ironworks, 80 *note*.
Casheldhu, night-jar at, 154.
Cassley, the river, 13, 40, 41, 99 ; bullfinch common along, 133 ; Strath, stoat near, 78 ; wood wren rare in, 304 ; house-martin in, 305 ; rock-doves seen up, 310.
Castlehill, 187 ; rookery at, 151.
Castletown, swifts at, 153 ; quarries at, 48.
Castor fiber, 66, 91.
Cat, wild, in Scotland, 1630 A.D., 65.
"Cattie," 255.
Cearvig Bay, puffin near, 242 ; razor-bill abundant at, 239.
Centrolabrus axoletus, 273.
Centrolophus pompilus, 262.
Centronotus gunellus, 269.
Cerastium latifolium, 142 ; *triviale*, 31.
Certhia familiaris, 115.
Cervus dama, 88 ; *elephas*, 67, 68, 87.
Chaffinch, 129.
Channel Islands, 40.
Charadrius pluvialis, 212.
Charr, 290.
Chat, stone, 105 ; whin, 104.
Chaulelasmus strepera, 189.
Chelidon urbica, 123, 305.
Chenopodium album, 31.
Cherleria sedoides, 142.
Chiff-chaff, 110.
Chimæra monstrosa, 257.
Chimera, northern, 257.
Chirnside, attempts to reintroduce capercaillie, 206.
Chough, red-billed, 145 ; disappearance of, throughout Scotland, 146.
Christian, Charles, 3.
Cinclus aquaticus, 102.
Circus æruginosus, 164 ; *cyaneus*, 164.
Clachtoll, tree-sparrow at, 128.
Clachtoll Bay, lesser launce at, 278.
Clangula glaucion, 192.
Clarke and Roebuck, *Vertebrate Fauna of Yorkshire*, 69.
Clashmore, meaning of the name, 17 ; squirrel at, in 1859, 90 ; sky-lark about the Loch, 143.
Clayquoys, 105.
Clett, the, 47 ; heron breeding at, 181 ; guillemots on, 240.
Clifton, Lord, 111 ; records the twite at Durness, 132 ; on brambling, 305 ; on Greenland falcon, 308.
Clochbheag, puffin at, 242.
Clomore, razor-bill abundant at, 239 ; puffin at, 242.
Clupea alosa, 292 ; *finta*, 292 ; *harengus*, 291 ; *pilchardus*, 292 ; *sprattus*, 292.
Clyde, faunal area of, 59.
Clyne, parish of, 24, 26 ; flow district in parish of, 25 ; 130.
Clyth, 55 ; jackdaw at, 147 ; pheasant preserved at, 201 ; golden plover shot at, 212.
Cnoc-na-neranach ("The Irishman"), 23.
Cnoc Staing, snowy owl shot at, 162.
Coal fish, 275.
Coccothraustes vulgaris, 126.
Cochlearia danica, 31 ; *officinalis*, 31, 142.
Cod, 274.
Coghill, Mrs., 120.
Coigeach, 30.
Coinnebheal, 30, 59.
Coir-na-fearn, favourite resort of deer, 23.
Colquhoun's, John, *Sporting Days* (1866), 7.
Columba palumbus, 197 ; *œnas*, 199, 310 ; *livia*, 198, 310.
Colymbus septentrionalis, 32, 244 ; *glacialis*, 243 ; *arcticus*, 243.
Colin, Virginian, 203.
Combe Island, nest of heron on, 181.
Conger, 294.
Conger vulgaris, 294.
Coot, 25, 208.
Coracias garrulus, 157, 306.
Cor Eshach, 88.
Cormorant, 62, 178.
Cornus suecica, 142.
Coronella lævis, 247.

Correen Hills, 139 *note*.
Coruisk in Skye, 28.
Corvus corax, 151; *cornix*, 147; *corone*, 147; *frugilegus*, 148; *monedula*, 146, 306.
Cotile riparia, 124.
Cottus bubalis, 265; *gobio*, 265; *quadricornis*, 265; *scorpius*, 265.
Coturnix communis, 202, 311.
Couch ("*British Fishes*"), on plain bonito, 263; on Bank's oar fish, 272.
Coul Beg, adder abundant on, 247.
Coul More, adder common on, 247.
Couper, James, 11.
Courser, cream-coloured, 211.
Craigbeg, 23.
Craigmore, 23.
Craig Riabhach, 60.
Craig Vhodich, 66.
Craig Voakie, 66.
Crakaig, otter at, 79; rookery at, 149; turtle-dove from, 200; badger killed at, 303.
Crake, Baillon's, 207; corn, 207; little, 207; spotted, 207, 311.
Cramond, Mr., of Thurso, 210.
Crask Inn, 60.
Crawford, J., 80, 82, 95; on the redstart, 106; on the long-tailed titmouse, 113; on the cole tit, 114; on the great grey shrike, 119; on the bullfinch at Tongue, 133; reports carrion crow at Kirkton, 147; observes swifts at Tongue, 153; observes nightjar at Tongue, 154; on the barn owl, 159; includes tawny owl, 161; on the eagle at Tongue, 167; on the pochard, 191; on the turtle-dove, 200; on coot in Farr, 208; on the sturgeon, 257; mentions doree, 262; on tunny, 263; reports hake, 276; reports turbot, 278.
Crawford of Lairg Hotel, 212.
Creeper, 115.
Creich, parish of, 22, 26, 28.
Crenilabrus melops, 273.
Crex bailloni, 207; *pratensis*, 207.
Cromalt Hills, 14, 29.
Cromarty, 14.
Crossbill, 134; nests in Balblair Wood, 22; European white-winged, 134; parrot, 133; two-barred, 135.
Crossopus remifer, 72; *fodiens*, 72.
Crow, carrion, 147; hooded, 35, 147.
Crystallogobius nillsoni, 268.
Ctenolabrus rupestris, 273.
Cuckoo, 158.
Cuculus canorus, 158.
Culbin Sands, Moray Firth, 48; stock-dove at, 199 *note*.
Culgower, water-shrew at, 72.
Cunninghame, *Geognosy of Caithness*, 8.
Curlew, 35, 226.
Cyclopterus lumpus, 266.
Cygnus bewickii, 187; *musicus*, 186; *olor*, 186.
Cynosurus cristatus, 31.
Cypselus apus, 153.
Cystophora cristata, 83.

Dab, rough, 279; smear, 279; common, 280.
Dace, 282.
Dactylis glomerata, 31.
Dafila acuta, 190, 309.
Dalgleish, on North American birds in Europe, 193.
Dalvina, common gulls near, 231.
Daucus carota, 31.
Davidson, 122.
Dawkins, Boyd, on the wild-boar, 67; *Cave-hunting*, 67.
Day, Dr. Francis (*British Fishes*), 7; on surmullet, 259; on bream, 259; on sea bream, 260; records bergylt, 260; on black fish, 262; on tunny, 263; on pogge, 266; records shanny, 269; records Yarrell's blenny, 269; on stickleback, 270; records doubly-spotted sucker, 271; on deal-fish, 271; on doubly-spotted sucker, 271; records Bank's-oar fish, 272; on hake, 276; records hake, 276; on lesser forkbeard 277; on larger launce, 277; on tench, 282; on the minnow, 282; on straight-nosed pipe fish, 295; on lancelet, 297.
Deal-fish, 271.
Dee, faunal area of, 59.
Deer, fallow, 88; red, 68, 87; found about Coir-na-fearn, 23; in A.D. 1630, 65.
Delphinapterus leucas, 85.
Delphinus albirostris, 86; *acutus*, 86; *delphis*, 69, 86; *orca*, 69; *tursio*, 86.
Dempster of Skibo, 88, 158; introduces pike, 283.
Denmark, faunal connection with, 62.
Dentex vulgaris, 259.
Dermid, 66.
Deveron, minnow in, 282.

"Devil's Bridge," 47; the rock-doves about, 199.
"Dhu-lochans," 44.
Dick, Robert, of Thurso, 8.
Dionard, Strath of, 33, 36; the river, 33, 60.
Dipper, 102; often called kingfisher, 157.
Dirrie-Chat, 87; More, 87.
Diver, black-throated, 35, 243; great northern, 243; red-throated, 32; its shriek, 34; red-throated, 244.
Dixon, C., *Evolution without Natural Selection*, 289 *note*; on evolution, 289 *note*.
Doeg, W. H., of Manchester, 7; on the great grey shrike, 119; receives white-tailed eagle from Caithness, 170; stuffed hen-harrier in possession of, 165; obtains buzzard, 166; receives rough-legged buzzard from Ousdale, 167; little auk with, 242.
Dog, 67, 69.
Dog-fish, black-mouthed, 254; picked, 254; small-spotted, 254.
Dolphin, 69; bottle-nosed, 86; common, 86; white-beaked, 86; white-sided, 86.
Donald Mathieson, cliff-climber, 38.
Doree, 262.
Dornoch, 13; quail nests near, 21; parish of, 22, 26; woods of, 87; great tit not about, 113; waxwing shot at, 120; fly-catcher at, 120; swallow at, 122; gold-finch breeds at, 125; tree-sparrow at, 128; roller shot near, 157; short-eared owl breeding near, 160; Pallas sand-grouse taken at, 200; quail at, 202; great black-backed gull breeds near, 233; little grebe about, 246.
Dornoch Firth, 13, 15, 20; seal in, 81; grey-lag goose in, 184; bernacle goose seems absent from, 186; shoveller not seen in, 189; widgeon in, 190; pochard in, 191; scaup in, 192; tufted duck shot in, 192; velvet scoter in, 194; goosander in, 195; grey plover in, 213; dunlin breeds near, 218; knot in, 220; red-throated diver seen in, 245; great-crested grebe killed in, 245; Sclavonian grebe in, 246.
Dorrery, Hill of, 45, 88; merlin shot at, 176; barn owl shot at, 159.
Dotterel, 211.
Dove, turtle, 200; stock, 199; rock, 198, 310; ring, 197.
Draba rupestris, 142.
Dragonet, 268.
Dresser, *Birds of Europe*, by, 184.
Drumbeg, twite common at, 132; sky lark common at, 144.
Dryas octopetala, 31.
Dubh Island, 30.
Duck, tufted, 192, 310; long-tailed, 193; eider, 194.
Duchally, marten shot at, 1866, 303.
Dunbar, Lewis, of Thurso, 2, 7, 215; records rosey pastor, 145; records red-billed chough, 145; on rookeries in Caithness, 150; records nightjar, 154; records roller, 157; obtains specimens of long-eared owl, 160; receives specimens of sheared owl, 161; obtains tawny owl, 161; records snowy owl, 162; receives specimens of hen-harrier, 165; receives buzzard from Caithness, 166; on the rough-legged buzzard, 166; supplies British Museum with eagle, 168; receives no white-tailed eagle since 1878, 170; includes goshawk, 170; records sparrow-hawk, 171; includes honey-buzzard, 172; records peregrine falcon, 175; Iceland falcon absent from list of, 173; receives specimens of merlin, 176; records bittern shot at Sandside, 182; records bean goose at Brawl, 185; records bernacle at Westerdale, 186; includes whooper, 187; preserves sheldrake, 188; records pintail, 190; does not include widgeon, 191; on tufted duck, 192; on long-tailed duck, 193; records black scoter, 195; records red-breasted merganser at Freswick, 197; on the ring-dove, 198; on ptarmigan, 203; includes black-game, 206; notes water-rail, 207; records great snipe, 217; records albino common snipe, 217; on jack snipe, 218; records ruff, 221; mentions godwit killed at Freswick, 225; records pomatorhine skua, 235; records red-throated diver, 245; records Sclavonian grebe, 246; on the starling, 305; on white-fronted goose, 309.
Dunbar, W., of Brawl Castle, 6, 215 *note*; kills Tengmalm's owl at Spinningdale, 163; doubtful record of marsh harrier by, 164; includes garganey, 190; reports golden-eye breeding near L. Assynt, 193; on Baillon's crake, 207; on red-

necked phalarope, 216 ; on grey phalarope, 216 ; records green sandpiper killed 1844, 222 ; includes Sandwich tern, 229 ; waxwing in possession of, 120 ; on rooks in Thurso, 150 ; notes hoopoe, 158 ; snowy owl in collection of, 162 ; kite in collection of, 171 ; Iceland falcon in possession of, 173 ; obtains hobby, 175 ; on the osprey, 177, 178 ; includes Bewick's swan, 187 ; on long-tailed duck, 193 ; shoots turtle-dove near Canisby House, 200 ; includes fulmar petrel, 238.

Dunbar's Stack, 54 ; lesser black-backed gull on, 233.

Dunbeath, 54 ; the river, 17, 19 ; grouse moors of, 53 ; bones of reindeer at, 68 ; fox at, 77 ; polecat at, 79 ; white whale at, 85 ; song-thrush seen at, 99 ; blackbird seen at, 101 ; water-ouzel at, 103 ; redstart at, 106 ; willow wren at, 111 ; wood-wren at, 111 ; sedge-warbler at, 112 ; creeper at, 115 ; wren at, 116 ; fly-catcher at, 121 ; sand-martin at, 124 ; martin at, 124 ; greenfinch at, 126 ; magpies killed at in 1876, 146 ; kestrel rare on moors of, 177.

Duncan, J. B., catches perch at Tongue, 258.

Duncansbay, 49 ; stacks of, 49 ; "Bores" of, 50 ; links of, 96 ; peregrine falcon at, 175 ; great black-backed gull at, 233.

Duncansbay Head, 45, 46 ; shag at, 180 ; kittiwake abundant at, 235 ; black guillemot at, 241.

Dunipace, water-shrew at, 73 *note* ; crossbill in collection at, 134 ; eggs of tree-sparrow at, 128 ; pied flycatcher in collection at, 122 ; great grey shrike in collection at, 119.

Dunn, Marsh, of Teignmouth, 135.

Dunrobin, 14, 15, 20 ; deer-forest of, 1 ; vermin killed at, 75 ; fox at, 76 ; otter not recorded at, 79 ; badger at, 80 ; number of squirrels killed at, 1873-80, 90 ; redstart common at, 106 ; redbreast at, 107 ; wood-wren at, 111 ; siskin breeds about, 125 ; siskin breeds at, 126 ; number of magpies killed in 1873-80, 146 ; carrion crow pairing with hoodie at, 147 ; hooded crow at, 147 ; old rookery at, 149 ; record of ravens at, 152 ; long-eared owl breeds about, 159 ; tawny owl breeds at, 161 ; honey-buzzard killed at, 172 ; peregrine falcon at, 174.

Dunrobin Aquarium, fifteen-spined stickleback in, 271.

Dunrobin Forest, 87 ; hen-harrier shot at the nest in, 164.

Dunrobin Museum, white whale in, 85 ; stag's head in, 87 ; blackcap in, 108 ; great tit in, 113 ; red-backed shrike in, 120 ; brambling in, 130 ; greater spotted woodpecker in, 155 ; green woodpecker in, 156 ; kingfisher in, 156 ; roller in, 157 ; hoopoes in, 158 ; barn owl in, 159 ; kite absent in, 171 ; honey-buzzard in, 172 ; Iceland falcon in, 173 ; eider duck in, 194 ; goosander in, 195 ; turtle-dove in, 200 ; quail in, 202 ; grey plover in, 213 ; dotterel in, from Ben Clibrick, 212 ; ruffs in, 221 ; stormy petrel in, 237 ; Leach's petrel in, 237 ; Sclavonian grebe in, 246 ; blue shark in, 252 ; porbeagle at, 253 ; sturgeon in, 257 ; doree in, 262 ; wolf-fish in, 268 ; cook wrasse in, 273 ; trout skins in, 288 ; sunfish in, 296 ; pilot whale in, 86 ; pochard in, 310.

Dunlin, 21, 35, 218.

Dunnet, 46, 47 ; redbreast at, 108 ; twite at, 132 ; jackdaw at, 147 ; cormorant breeds at, 179 ; shag at, 180 ; oyster-catcher at, 215 ; herring-gull at, 232 ; pomatorhine skua shot at Sands of, 235.

Dunnet Bay, 48.

Dunnet Head, 3, 45, 46 ; meadow pipit at, 118 ; swifts at, 153 ; buzzard bred at, 166 ; white-tailed eagle bred at, 169 ; eggs of white-tailed eagle from, 170 ; peregrine falcon at, 175 ; kestrel seen at, 177 ; wild-duck at, 189 ; guillemots at, 240 ; puffin abundant at, 242.

Durness, 31 ; limestone of, 32 ; manse of, 35 ; mole in, 71 ; fox in, 76 ; otter in, 79 ; badger in, 80 ; water-vole in, 92 ; wheatear at, 103 ; whinchat at, 104 ; meadow pipit at, 117 ; sparrow common at, 127 ; twite at, 132 ; common bunting at, 135 ; starling common at, 145 ; hooded crow at, 147 ; raven scarce about, 151 ; record of ravens at, 151 ; swift at, 153 ; hoopoe shot near, 158 ; white-tailed eagle killed at, 169 ; golden plover common at, 212 ; ringed plover near, 213 ; black-headed gull at, 230 ; little grebe breeds near, 246 ; adder

rare in, 247 ; hoopoe shot at, 306 ; pochard obtained at, 310.
Durness, Kyle of, 33, 36 ; sheldrake at, 188 ; sea-trout in, 286.
Dusky sculpin, 268.
Dwarwick Head, 48.
Dyce, Lieutenant, 6 ; and Sim, *Fish and Crustaceæ of the North-East Coast of Scotland*, 6.

Eagle, Golden, 167, 307 ; haunts Ben Armine, 23.
Eagle, white-tailed, on Handa, 39 ; white-tailed, 168, 307.
Eagles visit Rabbit Island, 38.
Echiodon, Drummond's, 277.
Edderachyllis described, 33 ; mole in, 71 ; tree-sparrow at, 128 ; heronry in, 181 ; slow worm about, 249.
Edinburgh, brambling at, 130 ; ruff from Caithness in Museum at, 221 ; torpedo sent to Museum of, 255.
Edinburgh Evening Courant, December 18, 1871, on the whooper, 187.
Edinburgh New Philosophical Journal, 5.
Edinburgh University, Museum of, tree-sparrow in, 129.
Edward picks up hammer-headed shark, 253 ; on black-mouthed dog-fish, 254 ; mentions small-spotted dog-fish, 254 ; records grey notidanus, 254 ; records homelyn ray, 256 ; records torpedo, 255 ; mentions starry ray, 256 ; on sandy ray, 256 ; records flapper skate, 256 ; records sharp-nosed ray, 256 ; records shagreen ray, 256 ; records northern chimera, 257 ; records bream, 259 ; records gilthead, 259 ; records swordfish, 261 ; records hair-tail, 261 ; records boar-fish, 261 ; records doree, 262 ; mentions sea bream, 262 ; records opah, 262 ; mentions Spanish mackerel, 263 ; records four-horned bullhead, 265 ; mentions red gurnard, 265 ; mentions streaked gurnard, 265 ; on the tub-fish, 266 ; records sea-snail, 267 ; obtains Montagu's sucker, 267 ; obtains spotted goby, 267 ; on two-spotted goby, 267 ; on white goby, 267 ; obtains *Crystallogobius*, 268 ; records dusky sculpin, 268 ; obtains gattoruginous blenny, 268 ; obtains Montagu's blenny, 269 ; obtains lesser grey mullet, 270 ; on ballan wrasse, 272 ; obtains Jago's goldsinny, 273 ; obtains small-mouthed wrasse, 273 ; on greater forked beard, 276 ; takes three-bearded rockling, 276 ; records lesser forkbeard, 277 ; mentions rough dab, 279 ; mentions Muller's topknot, 279 ; on *arnoglossus*, 279 ; obtains solenette, 280 ; on tench, 282 ; on argentine, 284 ; records *Argentina sphyrœna*, 291 ; on deep-nosed pipe-fish, 295 ; records twaite shad, 292 ; records oblong sunfish, 296 ; records hog-fish, 296.
Eel, 293.
Eider-duck, 38, 194.
Eilean Fiag, grey-lag goose breeding on, 308.
Eilean Garbh, 31 *note* ; kittiwake roosts on, 234.
Eilean Hoan, 31 *note* ; eider duck breeds at, 194.
Eilean-nan-Ghael, 95 ; sheldrake on, 188.
Eilean-nan-Roan, grey seal on, 82.
Einaig. *See* Ænaig.
Elder, P., shoots snowy owl, 163.
Elgin, 61 ; roller obtained at, 157 *note* ; oblong sunfish taken at, 296.
Elgin Courant, on ballan wrasse, 272 ; on cook wrasse, 273.
Elgin Museum, 272, 273.
Elm, rooks' nests on, 149.
Elphin, 29, 31, 40 ; common bunting at, 135.
Emberiza citrinella, 136 ; *miliaria*, 135 ; *schœniclus*, 137.
Encyclopædia Britannica, 16 *note*, 200 *note*.
Engraulis encrasicolus, 292.
Epilobium alsinifolium, 142.
Equus caballus, 67, 68.
Eriboll, white-tailed eagle killed in, 307.
Erica cinerea, 31.
Erinaceus europœus, 71.
Eriophorum angustifolium, 142.
Ermine, 78.
Erythacus rubecula, 107.
Esox lucius, 283.
Essington, 311.
Eudromias morinellus, 211.
Euphrasia officinalis, 31.
Evelix, parish of, 26.
Ewart, Professor Cossar, exhibits torpedo from Lossiemouth, 255.

"Facky," 234.
Falco æsalon, 175 ; *candicans*, 173, 308 ;

islandus, 173, 308; *peregrinus*, 174; *subbuteo*, 175; *tinnunculus*, 176.
Falcon, Greenland, 173, 308; Iceland, 173, 308; peregrine, 174; breeds on Handa, 39.
Falmouth, 43.
Faröe, gold-crest at, 109.
Far-out Head, rock pipit on, 118; meadow pipit on, 117; a rabbit on, 95.
Farr, flow district in parish of, 25; parish of, 28; coot in parish of, 208; red-throated diver breeding about, 244.
Fashven, 31.
Father Lasher, 265.
Faunal areas of Scotland, 59.
Felis catus, 75, 303.
Fern, royal, 35.
Festuca ovina, 31.
Fiag Burn, heronry on island of, 181.
Field, The, 9; on the blackbird, 101; on the migration of the redstart, 106; on the blackcap warbler, 108; on the Iceland falcon, 173; on the nest of cormorant, 179; on salmon, 285.
Fieldfare, 99.
Fierasfer dentatus, 277.
Findlemore, meadow pipit at, 118.
Fingal, 66.
"Finners," 84.
Fir, Scotch, 143; rooks' nests on, 149.
Firth Seal in Dornoch Firth, 21.
Fish, angel, 255.
Fishery Board of Scotland, 19 *note*; and torpedo from Lossiemouth, 255.
"Flapper," 165.
Fleet, the, 26.
Fleming, 84; on rock-dove, 199; on the Lavellan, 248; records Greenland shark, 255.
Flounder, 280.
Flower, Professor, 83, 85, 305.
"Flow," meaning of, 24.
Fluke, craig, 279; sail, 279.
Flycatcher, pied, 121; spotted, 120.
Foinnebhein, 30.
Forkbeard, greater, 276; lesser, 277.
Fortrose, thrasher shark taken at, 253.
Forsinard, 60; Leach's petrel taken at, 237.
Forss, missel-thrush breeds at, 98; long-tailed tit at, 113; rooks at, 149; rookery at, 150.
Forss, Hill of, merlin shot at, 176.
Forss, the river, 19.
Forth, faunal area of, 59.
Foumart, 65, 75, 78.
Fox, 67, 69, 76; in 1630 A.D., 65.
Fraser, Procurator-Fiscal, nephew of, 157.
Fratercula arctica, 242.
Frazer, lighthouse-keeper, 3.
Freswick, 54; links of, 96; snowy owl obtained at, 162; Greenland falcon trapped in Moss of, 173; red-breasted merganser shot at, 197; albino common snipe shot at, 217; godwit killed at, 225.
Fringilla cœlebs, 129; *montifringilla*, 129, 305.
Frog, common, 251.
"Frost-bite," golden plover liable to, 212.
Fulica atra, 208.
Fuligula cristata, 192, 310; *ferina*, 191, 310; *marila*, 191.
Fulmarus glacialis, 238.
"Futteret," 78.

Gadus œglefinus, 274; *luscus*, 275; *merlangus*, 274; *minutus*, 274; *morrhua*, 274; *pollachius*, 275; *virens*, 275.
Gadwall, 189.
Gaelic names in Sutherland and Caithness, 17.
Galium aparine, 31; *verum*, 31.
Gallinago cœlestis, 217; *gallinula*, 217; *major*, 217.
Gallinula chloropus, 208.
Gannet, 180.
Garbh Island, brown rat absent in, 92; puffin rare on, 242.
Garfish, 283.
Gare fowl, 239.
Garganey, 190.
Garnsary, badgers killed at, 303.
Garrulus glandarius, 146.
Gastrosteus aculeatus, 270; *spinachia*, 271.
Gatherer, J., on ballan wrasse, 272; obtains cook wrasse, 273.
Gecinus viridis, 156.
Geikie, Professor, 8.
Geise, rookery at, 150.
Gentiana campestris, 31.
Georgemas Junction, 52.
Gibson, lighthouse-keeper, 3.
Gibson, J., Curator, Edinburgh Museum, 221.
Gilchrist, takes white-tailed eagle, 169.

Gillies, Donald, 212.
Gilmour, John, lighthouse-keeper, 3, 122.
Gilthead, 259,
Girnigoe, old castle of, 54.
Glasbhein, meaning of, 17; 30, 34; ptarmigan on, 203.
Glas-leag-beg, 30.
Glas-leag-mohr, 30.
Glencassley, young osprey shot at in 1881, 178; slow worm in, 249; great-crested newt at, 250; wild cat killed at, 303; polecat trapped at, in 1885, 303.
Glen Coul, 36; doubtful egg of whimbrel from, 225; sea bream caught in, 260; herring ascends, 292.
Glen Dhu, 36; otter in, 79; fox in, 76; herring ascends, 292.
Glen, Dunbeath, bullfinch in, 133.
Glen Loth, a polecat killed in, 1881, 303; wolf killed in, 65.
Glenrossal, wood-wren at, 111; migration of redwing seen at, 99; tree pipit at, 118; bullfinch at, 133 *note*; tree pipit increased about, 304; water-vole killed at, in 1886, 304; starlings breeding at, in 1886, 305; great-spotted woodpecker seen at, 1886, 306; eagles troublesome at, 307; ptarmigan seen near, 311; water-rail seen at, 311.
Globicephalus melas, 86.
"Gloops," 47, 49.
Gneiss, Hebridean, 31.
Goat, 67, 68.
Goberneasgach, 35, 42, 60.
Gobius minutus, 267; *niger*, 267; *rhodopterus*, 267; *ruthensparri*, 267.
Goby, black, 267; two-spotted, 267; white, 267.
Godwit, bar-tailed, 21, 224; black-tailed, 225.
Göe, red, 48; the ashy, 49; wife's, 49.
Gold-crest, 109.
Golden-eye, 192.
Goldfinch, 124.
Goldsinny, 273; Jago's, 273.
Golspie, 83; parish of, 22; water-shrew at, 72; black rat near, 91; wood-wren at, 111; hoopoe taken at, 158; scops-eared owl shot at, 163; velvet scoter at, 194; Sclavonian grebe taken in garden at, 246; basse near, 258; lump-sucker taken at, 267; sprats caught off, 292; sunfish caught off, 296.
Golspie Burn, colony of martins on, 123.
Golly, Glen, 42.
Goosander, 195.
Goose, grey-lag, at Loch Sheanaskaig, 29; solan, 62; grey-lag, 183, 308; bean, 185; white-fronted, 185, 309; brent, 185, 309; bernacle, 186.
Gordon, Rev. Dr. George of Birnie, 158, 164; his *List of Fish, etc. etc., of the Province of Moray*, 6; records boar fish, 261; on pogge, 266; on wolf-fish, 268; records butter-fish, 269; on capture of deal-fish, 272; records great pipe fish, 295.
Gordon, Sir Robert, Bart., 5, 65, 66, 89; his *History of the Earldom of Sutherland*, 5, 65, 89; on capercaillie, 206.
Gordon, Rev. Walter, on plain bonito, 264.
Gordon, William, on the first black grouse in Helmsdale, 205.
Gordonbush, 22; sparrow not seen at, 127; heronry at, 181.
Goshawk, 170.
Grampus, 69, 86.
Grangemouth, grey plover at, 213 *note*.
Grann Stackach, 30.
Grasses, 31 note; "deer's hair," 24; "cotton," 25; "mossing," 25.
Gray, A., 138.
Gray, Robert, 6; his *Birds of the West of Scotland*, 1871, 6; on the whin-chat, 104; on the hawfinch, 127; mentions rosey pastor, 145; on the wryneck, 156; on scops-eared owl, 163; on the goshawk, 170; on the bittern, 182; on the knot, 220; on ivory gull, 230; on Buffon's skua, 236; on Brunnich's guillemot, 240; on great northern diver, 243.
Great Minch, 13.
Great Smoo Cave, swift breeds in, 153.
Grebe, great-crested, 245; red-necked, 245; little, 246; Sclavonian, 246.
Greenfinch, 126, 129.
Greenshank, 35, 56, 223, 312.
Greig, lighthouse-keeper, 3, 53.
Grey seal, frequents rocks in Sutherland, 21.
Grey notidanus, 254.
Grieve's *The Great Auk, etc. etc.*, 62 *note*.
Griffith, H., 306.
Grosbeak, pine, 133.
Grouse, red, 25, 204; Pallas sand, 200; black, 205.
Grudie, the river, 33, 36.

Gruinard, the river, fishing of, 286.
Gualin, 33, 60; marten at, 77; osprey once breeding near, 177.
Guaphalium supinum, 142.
Guardian office, H. Osborne in, 12.
Guillemot, 56; on Handa, 39; at the Clett, 47; common, 239; Brunnich's, 240; black, 241.
Gull, black-headed, 25, 230; on Handa, 39; great black-backed, 25, 54, 233; lesser black-backed, 25, 54, 232; herring, 25, 232; colonising power of, 54; "teaser," 228; ivory, 229; Sabine's, 229; common, 231; little, 231; glaucous, 234; Iceland, 234.
Gulls breed on the flows, 25.
Gunn, Dr., 83.
Gunn, John, on trout, 313.
Gunther, Dr., purchases eagle from Berriedale, 168.
Gurnard, red, 265; streaked, 265; grey, 266; sapphirine, 266.
Gurney, on harlequin duck, 193.

Haddington, Earl of, purchases American bittern, 183.
Hair-tail, 261.
Hake, 276.
Haliætus albicilla, 168, 307.
Halichœrus gryphus, 21, 82.
Halkirk, 44, 209; redshank at, 223.
Halladale, river, 26; valley of, 45; wolf killed at, 65.
Hancock takes ptarmigan's eggs on Ben Clibrick (1849), 203; egg of green shank with, 224.
Handa, vi, 37, 65; described, 38; brown rat in, 92; rabbit introduced on, 95; starling abundant at, 144; peregrine falcon at, 174; cormorant rare on, 179; bernacle goose at, 186; sheldrake rare on, 188; common tern questionably near, 228; great black-backed gull breeds on, 233; kittiwake breeds at, 234; Richardson's skua from, 236; razor-bill abundant on, 239; puffin on, 242; guillemot abundant on, 239.
Handbook to Thurso, etc. etc., 55.
Hardcastle, kills 32 partridges at Inchnadamph, 1869, 202.
Hare, in 1630 A.D., 65; common, 93; mountain, 94.
Harelda glacialis, 193.
Harp seal, shot in Sutherland, 21.
Harrier, hen, 164; marsh, 164.
Harris, Sound of, 48; straight-nosed pipefish in, 295.
Harrow Park, cole tit at, 114; fly-catcher shot at, 121.
Harting on the nightjar in Caithness, 155; on harlequin duck, 193; on dotterel, 212; on the ivory gull, 230 *note* [2].
Harvie-Brown, J. A., *Lecture on the Ferae Naturae of the British Isles* (1875), 7; *On Birds found Breeding in Sutherland* (1875), 7; *Supplementary Notes on the Birds found Breeding in Sutherland* (1877), 7; *The History of the Squirrel in Scotland*, 65 *note*, 90; *The Capercaillie in Scotland*, 206.
Haskeir, pintail's nest got on, 190.
Hawfinch, 126.
Hebrides, harp-seal on, 82; faunal area of, 59; song-thrush on the, 98.
Heddle, Professor, of St. Andrews, *Geognosy and Mineralogy of Sutherland and Caithness* (1880-84), 8; 18, 43; on the track of the field vole, 93.
Hedgehog, 71.
Hedge-sparrow, 112.
Helmsdale, 23; tree-sparrow at, 128; rough-legged buzzard from, 166; rock-doves seen at, 198; green sandpiper shot at, 222; black-tailed godwit shot near, 225; quails obtained at, 310.
Helmsdale Strath, rabbits in, 95; kite seen in, 172; honey-buzzard shot in, 172; osprey in, 1883, 178; black game in, 205.
Helmsdale, the river, 15, 20, 26, 60; flounder in, 280; salmon in, 284.
Hempriggs, 55; missel-thrush breeds at, 98; redbreast at, 108; flycatcher at, 121; starlings abundant at, 145; magpie builds at, 146; rooks at, 151; razor-bill near, 239; red-necked grebe on loch at, 245.
Hempriggs House, 54.
Henderson, A., of Stemster, 150; introduces pheasant, 310; on trout, 313.
Henderson, Captain John, *General View of the Agriculture of Caithness* (1815), 4.
Heracleum sphondylium, 31.
Heron, 181; colony of, at the Ord, 56; buff-backed, 182.
Herring, 291.
Hieracium, 31.

Highland and Agricultural Society Transactions, 1880, 15.
Hill, J., banker, 308; on the rock-dove, 198.
Himantopus candidus, 216, 311.
Hinxman, Lionel N., 3, 31 *note*, 138 *note* [1], 139; note on nesting of the snow bunting by, 140.
Hippoglossoides limandoides, 279.
Hippoglossus vulgaris, 278.
Hirundo rustica, 122.
Hobby, 175.
Hæmatopus ostralegus, 215.
Hog, 69.
Hog-fish, 296.
Holborn Head, 3, 45, 46, 53; ravens breed at, 152; swift at, 153; heron breeding at, 181; ringed plover at, 214; dunlin observed near, 219; guillemots at, 240.
Holborn Ness, jackdaw at, 147.
Holcus lanatus, 31.
Holibut, 278; sold for £4 in London, 278.
Honey-buzzard (female), shot in Uppat Woods, 22.
Hoopoe, 157, 306.
Horse, 67, 68.
Horsefish, 271.
Horse Island, 30.
Houstoun, Mr., of Kintradwell, 66, 72, 82; shoots harp seal, 21; kills a harp seal, 81; on deer-trap, 88; on the white hare, 95; on the tree-creeper, 115; on the hoopoe, 157; shoots grey phalarope, 216; introduces perch, 258; captures angler fish, 1884, 264; on the piper, 266; records sea snail, 267; on the wolf-fish, 268; records goby (two-spotted?), 267; mentions butter-fish, 269; records viviparous blenny, 269; on ballan wrasse, 272; on garfish, 283; on lamprey, 296.
Hoy, sand-stones of, 43; "Old Man of," 46.
Huna, 2, 52; jackdaw at, 147; oyster-catcher abundant at, 215.
Huna hotel, 49.
Hyperoödon latifrons, 85; *rostratum*, 85, 304.

Inchnadamph, 40, 41; descriptive of, 35; water-shrew at, 73; marten at, 77; polecat at, 78; hare at, 94; song-thrush appears at in 1881, 98; redstart absent from, 106; a tree pipit at, 118; swallow absent from in 1885, 122; martin common at, 123; greenfinch in garden at, 126; sparrow appears at, in 1882, 127; chaffinch at, 129; linnet at, 130; twite breeds at, 131; twite at, 132; skylark absent at, 144; starling absent at, 1885, 145; rook does not build at, 148; cuckoo at, 158; ring-dove at, 197; rock-doves at inn of, 199; partridges seen at, in 1834, 201; decrease and recovery of grouse at, 204; lapwing near, 214.
Innes, D., shoots bernacle at Sandside, 186.
Innes, Fred. S. Bentley, of Thrumster, 182; shoots Pallas sand grouse, 200.
Inver, the river, 36; water-shrew on, 73; adder seen beside, 247; salmon of, 286; eel in, 293.
Inverness, 61, 129, 157; tunny killed near, 263.
Inverness Courier on black-tailed godwit, 225; on capercaillie, 302.
Inverness Field Club, 138 *note*.
Inverpolly, deer forest of, 30; knot and sanderling from, 311.
Invershin, 90; shad taken at, 292; magpie at, 305; colony of jackdaws, 306.
Irby, Major, 9; takes nest of black-throated diver, 244.
"Irishman," hill so called, 23.

Jackdaw, 146, 306.
Jardine, Sir W., Bart., 5, 230; on Ray's wagtail, 117; observes ospreys in 1834 over the Laxford, 177; shoots scaup, 191; includes golden-eye, 192. *See also* 298.
Jay, 146.
"Jeckedybeet," 104.
Jennins, 189; on grey-lag goose, 184; on brent goose, 185; omits bernacle goose, 186; kills great-crested grebe, 245.
Joass, Rev. Dr. J. M., Golspie, 66; on the black rat, 91; on the roller, 157; on the black scoter, 194; on the turtle-dove, 200; records basse, 258; records blenny, 269; obtains fifteen-spined stickleback, 271; mentions minnow, 282; on harp seal, 303; on rosey pastor, 305.
John o' Groat Journal, 11; H. Osborne employed in office of, 12; on mam-

malia, 69; on little bustard, 211; on Sabine's gull, 229; on the anchovy, 292.
John o' Groat's, deer near, 88; turtle-dove shot near, 200.
Juncus acutiflorus, 31; *trifidus*, 142.
Jynx torquilla, 156.

Keerie sheep, 50.
Keiss, 67; links of, 96; red-breasted merganser near, 197; Bank's-oar fish from, 272.
Keiss Castle, sheldrake shot at, 188.
Keith, Captain, 2, 163.
Kemp, Daniel W., 4.
Kestrel, 165, 176.
Kilcalmkill, 22.
Kildonan, 15; parish of, 22, 26; flow district in, 25; wood-wren at, 111; barn owl shot at, 159; honey-buzzard shot at, 172; pheasant introduced at, 201; wild cat killed at, 1887, 303.
Kilminster, snowy owl shot at, 162.
Kingfisher, 156.
Kintradwell, pine-trees at, 22; harp seal killed at, 81; wood-wren at, 111; pied flycatcher in garden at, 121; white-tailed eagle killed at, 169; velvet scoter near, 194; black game in, 205; grey phalarope shot at, 216; sanderling seen near, 221; lesser tern at, 228; blue shark at, 252.
Kirkaig Bay, 40.
Kirkaig Falls, wren at, 116.
Kirkaig, the river, 14, 29, 36, 59; adder seen along, 247; salmon of, 286.
Kirkcudbright, ravens in, 151 *note*.
Kirkton, carrion crow at, 147; rookery at, 149; turtle-dove from, 200.
Kirkwall, 53; field vole about, 93.
Kite, 171.
Kittiwake, 234; on Handa, 40.
Kjökkenmöddings, 67.
Knautia arvensis, 31.
Knockan, 31, 40; common bunting at, 135.
Knot, 220, 312.
Kortwright, Mr., 312.
Kyle of Sutherland, 13, 26, 40; magpie along, 305; diver (black-throated?) shot in, 244; osprey seen at, 178; common bunting around, 135.
Kyle of Tongue, 20, 82; white whale in, 85; pilot whale in, 86; eider duck breeds off, 194; great northern diver in, 243; lesser launce in, 278; sea-trout in, 286.

Labrax lupus, 258.
Labrus maculatus, 272; *mixtus*, 273.
Lacerta vivipera, 248.
Læmargus borealis, 255.
Lagopus mutus, 203, 311; *scoticus*, 204.
Laidlaw, David, 3.
Laing, Samuel, *Prehistoric Remains of Caithness* (1866), 8, 62, 67.
Lairg, 1, 15, 28, 60; parish of, 26; whinchat at, 104; wood-wren at, 111; long-tailed titmouse breeds at, 113; creeper at, 115; greenfinch common at, 126; chaffinch at, 129; lesser redpoll at, 131; bullfinch common at, 133; yellow-hammer at, 136; swifts near, 153; white-tailed eagle in parish of, 169; goosander near hotel of, 196; part-ridge common at, 201; water-rail seen at, 207; dunlin breeds at, 218.
Lamnia cornubica, 253.
Lamprey, 296; small, 296.
Lampris luna, 262.
Lancelet, 297.
Land and Water, H. Osborne contributes to, 11; on the hump-backed whale, 83; on torpedo, 255; on angler fish, 264.
Langwell, 2, 16, 53, 54, 69; forest of, 88; roe-deer at, 89; missel-thrush breeds at, 98; stone-chat at, 106; red-start at, 107; willow-wren at, 111; bullfinch at, 133; common bunting at, 135; rooks at, 149; pheasant at, 201.
Langwell, the river, 17, 19, 56; salmon famous in, 285 *note*.
Lanius excubitor, 119; *collurio*, 120.
Lapwing, 214.
Lark, sky, 143.
Larus ridibundus, 230; *canus*, 231; *minutus*, 231; *argentatus*, 232; *fuscus*, 232; *marinus*, 233; *glaucus*, 234; *leucopterus*, 234.
Latheron, 54; long-tailed tit at, 113; swift at, 154.
Latheronwheel, missel-thrush breeds at, 98; blackbird seen at, 101; rooks at, 149; American bittern shot at, 182; pheasant preserved at, 201.
Latrunculus albus, 267.
Launce, larger, 277; lesser, 278.
Lawson, G. R., 111; on the brambli 130.

Lavellan, 73 ; remarks on the, 248.
Laxford, the river, 33 ; ospreys seen at, 177.
Ledbeg, 32.
Leeds, snowy owl in Museum at, 162 ; Philosophical and Literary Society, 173.
Leith, Mr., 209.
Leontodon taraxacum, 31.
Lepadogaster bimaculatus, 271.
Lepus cuniculus, 69, 95 ; *europœus*, 93 ; *variabilis*, 94.
Leuciscus phoxinus, 282.
Lewis, pomatorhine skua near, 235.
Liam-na-chlaven, Loch, 27.
Ligurinus chloris, 126.
Ligusticum scoticum, 31.
Limosa lapponica, 224 ; *melanura*, 225.
Ling, 276.
Linota cannabina, 130 ; *flavirostris*, 131, 305 ; *linaria*, 131 ; *rufescens*, 131.
Linum catharticum, 31.
Liparis montagui, 267 ; *vulgaris*, 267.
Little Ferry, 20, 22, 27 ; resort of seal, 81 ; white whale at, 85 ; kingfisher killed at, 156 ; swans at, 186 ; sheldrake at, 188 ; widgeon at, 190 ; scaup at, 192 ; velvet scoter at, 194 ; dunlin seen at, 218 ; knot at, 220 ; viper weever taken at, 264 ; lesser launce at, 278.
Lizard, common, 248.
Loanan Strath, 94.
Loanan, the river, 36 ; lapwing along, 214.
Loch, J., *An Account of the Improvements, etc., on the Estate of Sutherland* (1820), 5, 43.
Loch Achilty, pike caught in, 283.
—— Alsh, 32 ; heronry of, 181.
—— -an-Hard, meaning of, 17.
—— -an-Ruair, 27.
—— -an-tarbhach-more, 60.
—— Assynt, 15, 35 ; barn owl breeds at, 159 ; dunlin breeds near, 219 ; great-crested newt at, 250 ; trout of, 287 ; charr in, 290.
—— Awe, 35 ; redstart at, 106 ; short-eared owl on island of, 160 ; curlew around, 226 ; tame gull at, 231.
—— Bad-an-eontigh, coot on, 208.
—— Baddagyle, 30.
—— Beannoch, 34, 42 ; rook at, 148 ; heronry of, 181.
—— Borralaigh, 36 ; black-headed gull at, 230.
Loch Borrolan, 14 ; trout of, 287 ; charr in, 290.
—— Broom, 14.
—— Brora, 15, 27 ; osprey haunts, in 1879, 178 ; heronry at, 181 ; widgeon at, 191 ; pheasant at, 201 ; little grebe breeds at, 246 ; American trout in, 290 ; charr in, 290.
—— Cairnbawn, 37.
—— Calder, 44 ; charr in, 291.
—— Cama, 15, 35, 40 ; rookery at, 148, 149 ; heronry extinct at, 181 ; charr in, 290.
—— Choire, 23, 27.
—— Coul, 37.
—— Cracle, Baillon's crake shot near, 207 ; great-crested grebe on, 245.
—— Craggie, 36 ; sparrow-hawk breeding at, 171 ; red-necked phalarope at, 216.
—— Crassapuil, 35 ; trout of, 288.
—— Dhu, 37.
—— Dionard, 36.
—— Drumbeg, 42.
—— Duich, 28.
—— Ellag, 59.
—— Eriboll, mole at, 71 ; widgeon at, 191 ; nightjar at, 154 ; scaup absent at, in 1849, 192 ; eider-duck breeding at, 194 ; black guillemot abundant near, 241 ; palmated newt near, 250 ; garfish taken near, 283 ; shad in, 292 ; sunfish seen at, 296.
—— Fewn, 14, 15 ; charr in, 290.
—— Fiag, nest of white-tailed eagle on, 169.
—— Gorm, meaning of, 17 ; reed bunting at, 137 ; hedge-sparrow at, 112 ; trout of, 287.
—— Griam, 15, 35, 60 ; meaning of, 17 ; charr in, 290.
—— Gruagach, merlin breeding at, 176.
—— Hope, 15, 42 ; scaup absent at, in 1849, 192.
—— Inchard, 37.
—— Inver, 15, 34, 36, 37, 41, 42 ; rabbit about, 95 ; missel-thrush's nest at, 97 ; song-thrush at, 98 ; blackbird common about, 100 ; redstart at, 106 ; redbreast at, 107 ; wood-wren possibly at, 111 ; great tit at, 113 ; flycatcher at, 121 ; bullfinch at, 133 ; nightjar at, 154 ; barn owl at, 159 ; peregrine falcon at, 174 ; ring-dove at, 198 ; partridge about, 201 ; dunlin breeds at,

218 ; great-crested newt at, 250 ; porbeagle caught at, 253 ; sea bream caught at, 260 ; haddock in bay of, 274 ; ling common at, 276 ; sea-trout in, 286 ; fossak of, 287.
Loch Kirkaig, 37.
—— Laoghal (Loyal), 15, 36 ; goldfinch at, 125 ; grey-lag goose leaves, 184.
—— Laxford, 15, 37, 102 ; meadow pipit at, 118 ; tree-sparrow breeds at, 128.
—— Letteressee, 42; barn owl seen at, 159.
—— Lurgan, 30.
—— Maddy (or Maedie?), golden-eye at, 193.
—— Meadie (Durness), 35, 213.
—— Merkland, 15, 35, 60 ; charr in, 290.
—— Migdale, 28 ; long-eared owl at, 160 ; common tern breeds at, 227 ; sandwich tern seen at, 229 ; pike in, 283.
—— More, 15, 35, 42, 45, 56, 60.
—— Mulach-Corry, golden plover common at, 212 ; little grebe shot at, 246 ; trout of, 287.
—— -na-Choir, 60.
—— -na-Clar, 15, 27.
—— -na-Clashfearn, heronry of, 181.
—— -na-Cuen, 15, 27.
—— Naver, 15, 26, 27 ; missel-thrush at, 97 ; buzzard breeding at, 165 ; widgeon at, 191.
—— Owskeich, 30.
—— Raa, 30.
—— Rimisdale, 15, 27.
—— Sandwood, 37, 92 ; sheldrake rare at, 188 ; lesser launce in, 278.
—— Sarclet, red-necked grebe on, 245 ; Sabine's gull near, 229 ; bar-tailed godwit in, 224.
—— Seye, trout of, 288.
—— Sgearach, trout of, 287.
—— Sheanaskaig, 29 ; lesser black-backed gull at, 233.
—— Shin, 15, 26, 42 ; descriptive of, 33, 35 ; wood-mouse at, 91 ; whin-chat at, 104 ; coal tit at, 114 ; tree-sparrow at, 128 ; yellow-hammer at, 136 ; swifts at, 153 ; heronry of, 181 ; grey-lag goose now absent from, 184 ; swans at, 186 ; widgeon at, 191 ; goosander on, 196 ; oyster-catcher on, 215 ; dunlin breeds near, 218 ; decrease of great black-backed gull on, 233 ; adder near, 247 ; charr in, 290 ; Greenland falcon seen on, 308 ; grey-lag goose breeding on, 308.
Loch Shurrin, 288.
—— Slam, 36 ; sand-martin at, 124.
—— Stack, 15, 35.
—— Stemster, black-headed gull at, 231 ; sedge warbler at, 304.
—— Urigill, 15, 35 ; grey-lag goose deserts, 184 ; dunlin breeds at, 218 ; lizard about, 248 ; charr in, 290 ; grey-lag goose breeding on, 308 ; pochard on, 310.
—— Veyattie, 14, 15 ; charr in, 290.
—— Watten, 44, 52 ; tufted duck seen at, 192 ; trout of, 288.
Loiseleuria procumbens, 142.
Lolium perenne, 31.
Lomvia troile, 239 ; *brunnichii*, 240.
London, Zoological Society of, 230.
Lophius piscatorius, 243, 264.
Lophophanes cristatus, 115.
Lossiemouth, stock-dove at, 199 *note* ; torpedo at, 255 ; black fish taken at, 262 ; double-spotted sucker taken at, 271 ; ballan wrasse from, 272 ; cook wrasse taken at, 273.
Loth, 72 ; parish of, 24.
Lothbeg Burn, 26 ; frequented by otter, 79.
Lothbeg Point, 82.
Lotus colniculatus, 31.
Low, 84 ; his *Fauna Orcadensis*, 81 ; on the seal, 81.
Loxia curvirostra, 134 ; *leucoptera*, 134 ; *pityopsittacus*, 133.
Lumpsuecker, 266.
Lunn, 3.
Lutra vulgaris, 79.
Luzula campestris, 31 ; *spicata*, 142.
Lybster, long-tailed tit at, 113.
Lycopodium alpinum, 142 ; *selago*, 142.
Lyth, parrot crossbill at, 133 ; rooks at, 149.

M'Aulay, Peter, keeper, 283.
M'Beath, barn owl shot by, at Dorrery, 159.
M'Donald, on the areas of woodland, etc., in Sutherland, 15.
Macdonald, Captain, 85.
Macdonald, Rev. —— of Durness, *Manuscripts of*, 5.
M'Ewen, James, traps snowy owl at Ousdale, 163 ; traps goshawk, 170 ; traps Greenland falcon, 173.
M'Gee, 3.

Macgillivray, W., *British Quadrupeds* (1883), 5; on dotterel, 212.
Machetes pugnax, 221.
M'Intyre, keeper at Balnacoil, 129.
M'Iver of Scourie, 39; on grey-lag goose, 184; obtains bernacle goose, 186; ivory gull with, 229.
Mackay, Adam, 85.
Mackay of Portnacon, 17.
Mackay, Donald, obtains eggs of hen-harrier on Rabbit Island, 164.
Mackay, Eric S., little stint in collection of, 219; Sabine's gull with, 229.
M'Kay, Major, 95.
M'Kenzie, John, obtains snowy owl, 162.
Mackenzie, Sheriff, 21, 88, 90; obtains a blackcap warbler, 108; on the long-tailed titmouse, 113; on the great tit, 113; shoots waxwing at Dornoch, 120; finds flycatcher about Dornoch, 121; on the goldfinch, 124; on the tree-sparrow, 128; obtains specimens of crossbill, 134; shoots greater-spotted woodpecker at Dornoch Castle, 155; records short-eared owl, 160; obtains long-eared owl from Tongue, 160; on the shoveller, 189; on the goosander, 196; finds deserted nest of quail, 1873, 202; on grey plover, 213; on dunlin, 218; does not record ruff, 221; on knot, 220; on pike, 283.
Mackenzie, Kenneth, traps marten, 303.
Mackerel, 263; horse, 261; Spanish, 263.
Mackie of Wick, 133.
M'Lauchlan, George, lighthouse-keeper, 240.
Macleay, W., birdstuffer, Inverness, 129, 145, 157, 158, 162, 171, 175, 189; on the crossbill, 134; on tawny owl, 161; preserves rough-legged buzzard, 166; receives solitary grey plover, 213; green sandpiper with, 222; preserves black-tailed godwit, 225; wild cat preserved by, 303; greater-spotted woodpecker preserved by, 306; pochard stuffed by, 310.
M'Leod, Allan, 79.
M'Leod, J., shoots roller at Sandside, 157; shoots bittern at Sandside, 182.
MacNicol, Nicol, 154.
MacNicol, R., keeper, shoots Sclavonian grebe, 1878, 246; shoots honey-buzzard, 308.
M'Pherson, Rev. J., of Canisbay, 2, 49, 51.
Magpie, 146, 305.
Maiden Pap, 44, 45, 56.
Mallert, 23.
Mareca penelope, 190, 309.
Marten, 65, 75, 77, 303.
Martes abietum, 77, 303.
Martin, Mr., on thrasher shark, 253; records deal-fish, 271.
Martin, house, 123, 305; year 1885 favourable to, 124.
Martin, sand, 124.
Mathieson, Donald and Peter, cliff-climbers, 38.
Maurolicus borealis, 284.
Maw, 232.
May, Isle of, 51.
Meall-a-chuail, 60.
Meallanlia hills, 26.
Meallmeadhonach, meaning of, 17.
Megaptera longimana, 83.
Meikle Ferry, pied flycatcher dead at, 121; rosey pastor obtained at, 305.
Meles taxus, 80, 303.
Melness, pilot whale at, 86.
Melsetter, 49.
Melvich, 46; turtle-dove in, 200.
Mergulus alle, 241.
Mergus albellus, 197; *cucullatus*, 197; *merganser*, 195.
Merlin, 165, 175.
Merluccius vulgaris, 276.
Merops apiaster, 157.
"Merrie Men of Mey," 50.
Mesoplodon sowerbiensis, 85.
Mey, jackdaw at, 147; oyster-catcher abundant at, 215.
Migration Committee, 3, 9; razorbill reported by, 239.
Migration Reports, 53 *note*, 110.
Millais, John Guille, vii, 163; shoots ivory gull, 230.
Miller, H., *Old Red Sandstone*, 8; *Testimony of the Rocks*, 8; *Footprints of the Creator*, 8.
Milligan Hall, Taunton, 134.
Milner, Sir W. M. E., collection of, 162; sees Iceland falcon at Thurso, 173; Iceland falcon in list of, 173; on the partridge, 201; on Brunnich's guillemot, 241; Buffon's skua in collection of, 312.
Milvus ictinus, 171.
Mina Villa, Thurso, pintail preserved at, 190; rookery at, 150.
Minch, torsk caught on the, 277.
Mineralogical Magazine, 43 *note*.

Mingulay, 39.
Minnow, 282.
Mole, 71.
Molva vulgaris, 276.
Monodon, monocerus, 85.
Montagu's sucker, 267.
Moray, 14; watershed of, 29; faunal area of, 59; water system of, 60.
Moray Firth, 59; fishes in, 252, *et seq.*; surmullet taken in, 259; sea-bream in, 260; tunny in, 263; grey gurnard in, 266; shanny in, 269; cod, haddock, and power in, 274; pollack common in, 275; hake in, 276; brill in, 279; sole in, 280; tench in, 282; lancelet in, 297.
More, A. G., *On the Distribution of Birds in Great Britain, etc.*, 1865, 6; on the white-throat, 108; on Ray's wagtail, 117; on short-eared owl, 160; on water-rail, 206; on Brunnich's guillemot, 241.
Morrison, Hew, F.S.A. Scot., 8.
Morven, 44, 45, 56; ptarmigan on, 203.
Morvich, roller obtained at, 157; scops-eared owl shot at, 163; black game at, 205.
Motacilla alba, 116; *flava*, 117; *lugubris*, 116.
Motella tricirrata, 276.
Mound, The, linnet at, 130; swans at, 186; the little grebe at, 246.
Mouse, house, 91; wood, 91.
Mugil chelo, 270.
Muir's, T. S., *Caithness and Part of Orkney*, 5.
Mullachgrah Island, 30.
Mullet, lesser grey, 270.
Mullus barbatus, 259.
Munro, J., 78; captures greenfinch, 126; shoots black-throated diver, 244.
Murchison, Sir Roderick, 8.
Murray, keeper at Cashel-dhu, 154.
Murray, David, Gruinard House, Aultbea, 286 *note*.
Muscardinus avellanarius, 91.
Muscicapa grisola, 120; *atricapilla*, 121.
Mus decumanus, 92; *minutus*, 91; *musculus*, 91; *rattus*, 91; *sylvaticus*, 91.
Musgrave, shoots spotted crake, 311.
Mussel-scalp, 21.
Mustela erminea, 78; *putorius*, 78, 303; *vulgaris*, 77.
Mustelus vulgaris, 253.
Myosotis arvensis, 31.
Myxine glutinosa, 296.

Nairn, 61.
Narwhal, 85.
Naucrates ductor, 261.
Naver, destruction of seals at mouth of, 82.
Naver Bay, 20.
Naver, Strath, nests of missel-thrush in, 97; long-tailed tit in, 113.
Naver, the river, 26; ravens on, 152; heron breeds on island on, 181; salmon in, 284.
Navidale, starved rock-doves at, 198.
Nerophis lumbriciformis, 295; *ophidion*, 295.
Nessletter, 46; jackdaw at, 147.
New Stat. Account of Scotland (1841), 5, 8; list of Caithness birds in, 62; on mammalia, 69; on the wild-cat, 75; on red deer, 88; on the squirrel, 90; on the great grey shrike, 119; on pheasant, 201.
Newt, palmated, 250; smooth, 250; great-crested, 250.
Newton, Professor, of Cambridge, 7, 209; on harlequin duck, 193; "Ibis," 200 *note*; egg of little bustard in collection of, 210.
New Zealand, 290.
Nichol, Mr., keeper, shoots whooper at Westfield, 187.
Nicholson on the Lavellan, 248.
Nicolson, Mr., vii.
Nightjar, 154, 306.
Noctule, 70.
Northern Chronicle, on the hoopoe, 158; records ivory gull at Thurso, 230.
North Head of Wick, glaucous gull killed near, 234.
North Rona, 13; Leach's petrel breeds on, 237 *note*.
North Sea, 13.
Norway, migrants to, 52; eels taken salted to, 294.
Norwegian sailors, eels a prize for, 293.
Noss Head, 3, 84; lighthouse, 53; martin breeds at, 123.
Notidanus griseus, 254.
Numenius arquata, 226; *phæopus*, 225, 312.
Nyctale acadica, 163; *tengmalmi*, 163.
Nyctea scandiaca, 162.

Œdemia fusca, 194; *nigra*, 194; *perspicillata*, 195.
"Old Man of Hoy," 46.
"Old Man of Stoir," rocks so called, 37.
Old Stat. Acc. Scot., 4; on mammalia, 69; on the squirrel, 90; on rabbits, 95.
Old Tain, 46; links of, 48.
Olrig, rookery at, 151.
Omond, R. T., 78 *note*.
Onopordium acanthium, 31.
Opah, 262.
Orchis maculata, 31.
Orcynus thynnus, 263.
Ord, The, of Caithness, 17, 56, 66; ring-ouzel at, 102; snowy owl trapped at, 163; rough-legged buzzard often seen at, 167; white-tailed eagle bred at, 169; peregrine falcon at, 175; rock-dove breeds at, 198.
Ordnance Survey, 23 *note*; area of Sutherland in, 14; area of Caithness in, 16; Gaelic and Scandinavian names in, 18.
Oriole, golden, 119.
Oriolus galbula, 119.
Orkney, faunal area of, 59; grey seal in, 82; field vole in, 93; long-tailed duck in, 193; red-breasted merganser in, 197; manx shearwater breeds in, 238 *note*.
Ormly Farm, long-eared owl from, 160.
Orthagoriscus truncatus, 296; *mola*, 296.
Osborne, Henry, 2, 6, 62; contributes to *The Field*, 9; Memoir of, 11; British Birds, writes a history of, 12; death of, in 1868, 12; meets with starved redwings, 99; on the blackbird, 101; on the ring-ouzel, 102; on the wheat-ear, 104; on the stone-chat, 105; on the red-start, 106; incident regarding robin by, 107; on blackcap warbler, 108; on the gold-crest, 109; on the chiff-chaff, 110; on the hedge-sparrow, 112; on the cole tit, 114; on the creeper, 115; on the wagtail, 116; on the grey wagtail, 117; on the great grey shrike, 119; observes waxwing, 120; on the flycatcher, 121; observes tree-sparrow in Caithness, 129; on the chaffinch, 129; on the lesser redpoll, 131; on the twite, 132; on the bullfinch, 133; records parrot crossbill in Caithness, 133; mentions yellow-hammer, 136; observes snow-bunting, 143; on the magpie, 146; on the hooded crow, 148; on rooks, 149; on the raven, 152; on the roller, 157; on the long-eared owl, 160; records short-eared owl, 161; records snowy owl at Strathmore, 162; on the hen harrier, 165; on the white-tailed eagle, 169; on the sparrow-hawk in Caithness, 171; narrative regarding peregrine by, 174; obtains hobby from Thrumster, 175; records merlin, 176; on the kestrel, 177; on the cormorant, 179; on the shag, 180; on grey-lag goose, 184; on white-fronted goose, 185; on the pintail, 190; on tufted duck, 192; fails to obtain eider duck, 194; records pheasant at Stirkoke, 201; mentions quail at Ulbster, 202; on the ptarmigan, 203; mentions spotted crake, 207; waterhens in possession of, 208; on dotterel, 212; on golden plover, 212; mentions ringed plover, 213; on the turnstone, 214; on jack snipe, 218; observes purple sandpiper, 220; records knot, 220; on bar-tailed godwit, 224; on whimbrel, 226; on gull-teasing habits of tern, 228; on the herring gull, 232; skua (living) in possession of, 235; on Richardson's skua, 236; records fulmar petrel, 238; on manx shearwater, 238.
Osborne, Henry (sen.), keeping grouse, 205; attention to grouse by, 205 *note*.
Osmerus eperlanus, 291.
Osmunda regalis, 35.
Ospisdale, attempts to reintroduce capercaillie at, 206.
Osprey, 177; undisturbed in 1850, 178.
Ossory, 4.
Otis tetrax, 209.
Otter, 65, 79.
Otus vulgaris, 159; *brachyotus*, 306.
Ousdale, 56; snowy owl trapped at, 163; rough-legged buzzard often seen at, 167; eagles at, 168; goshawk trapped at, 170; Iceland falcon trapped at, 173.
Outer Hebrides, 13.
Ouzel, water, 199.
Ouzel, ring, 101; around Stronchrubie, 41.
Overskaig, cole tit at, 114.
Owen, Professor, 68.
Owl, long-eared, 159; short-eared, 160, 306; tawny, 161; snowy, 162; scops-eared, 163; Tengmalm's, 163; barn, 159, 306.
Ox, 67, 68.

Oxyria reniformis, 142.
Oykel Bridge, 13, 22, 29, 41; skylark about, 143; dunlin breeds above, 218; great black-backed gull breeding at, 233.
Oykel, the river, 13, 15, 29, 41, 59; common bunting on, 135; river salmon in, 285.
Oyster-catcher, 49, 215; fond of mussel-scalp, 21.

Pagellus centrodontus, 260.
Pagophila brachytarsus, 230 *note*; *eburnea*, 229.
Pagrus auratus, 259.
"Paidle cock," 266.
Palmer scarf, 179.
Pandion haliætus, 177.
Partridge, 201.
Parus britannicus, 114.
Parus cæruleus, 115; *major*, 113.
Passer domesticus, 127; *montanus*, 128.
Pastor roseus, 145, 305.
Pastor, rosey, 145, 305.
Peach, Benjamin N., 3, 31 *note*, 71, 140; on the black water-vole, 92; on the red-start, 107; on the snow-bunting, 138; list of Alpine plants by, 142 *note*; sees sheldrake in Kyle of Durness, 188; notices smooth hound, 253; on porbeagle, 253; on basking shark, 253; on picked dogfish as food, 254; on Greenland shark, 255; on angel fish, 255; records starry ray, 256; records sturgeon, 257; records basse, 258; on surmullet, 259; on sea bream, 260; on father lasher, 265; on red gurnard, 265; on grey gurnard, 266; on pogge, 266; finds shanny, 269; records butter-fish, 269; records viviparous blenny, 269; on lesser grey mullet, 270; observes nests of stickleback, 271; on Bank's-oar fish, 272; on ballan wrasse, 272; on power cod, 274; on coal fish, 275; on rocklings, 276; includes lesser forkbeard, 277; on turbot, 278; on the launce, 278; mentions Eckstrom's topknot, 279; mentions sail fluke, 279; obtains solenette, 280; on garfish, 283; on pike in the Wick, 283; records argentine, 284; on trout, 288; on shad, 292; on pilchard, 292; on the anchovy, 292; on Caithness names for eel, 293; records pipe fish (straight-nosed and worm), 295; mentions sunfish, 296; records small lamprey, 296.
Peat-mosses of Sutherland, 87.
"Pelcher," 270.
Pennant, J., *Tour in Scotland and Voyage to the Hebrides* (1774), 4; *A Tour in Scotland* (1769), 4; on the water-shrew, 73; on the Lavellan, 248.
Pentland Firth, 15, 26, 28, 46; Greenland shark in, 255.
Pentland Skerries, 50; visited by Harvie-Brown, 2; lighthouse-keepers at, 3; Migration Reports from, 9; mentioned by Low as resort of seal in 1813, 81; black red-start obtained from, 107; pied flycatchers at, 122; jackdaw not observed on, 147; eider duck's eggs from, 194; corn-crake breeds on, 208; oyster-catcher abundant on, 215; dunlin tame on, 219; Arctic tern on, 227; common tern breeds on, 228; stormy petrel breeding on, 237; little auk on, 242.
Perca fluviatilis, 258.
Perdix cinerea, 201.
Peregrine falcon, 54, 174.
Pernis apivorus, 172, 307.
Petrel, 144; Leach's, 237; stormy, 237; fulmar, 238.
Petromyzon branchialis, 296; *marinus*, 296.
Phalacrocorax carbo, 62, 178; *graculus*, 62, 179.
Phalarope, grey, 216; red-necked, 216.
Phalaropus fulicarius, 216; *hyperboreus*, 216.
Phasianus colchicus, 201, 310.
Pheasant, 56, 201, 310.
Phillip, Mr. Colin, 18.
Phleum arenarium, 31.
Phoca grœnlandica, 21, 81, 303; *vitulina*, 21, 38, 51, 81.
Phocæna communis, 86.
Phycis blennioides, 276.
Phylloscopus collybita, 110; *sibilatrix*, 111, 304; *trochilus*, 110, 304.
Physeter macrocephalus, 85.
Pica rustica, 146, 305.
Picus major, 155, 306; *minor*, 155.
Pig, 67.
Pigeon, rock, 57; Tegetmeier's work on, 11.
Pike, 283.
Pilchard, 292.
Pilot fish, 261.

Pine trees in Sutherland, 21.
Pintail, 190, 309.
Pipe fish, deep-nosed, straight-nosed, great, 295.
Piper, 266.
Pipistrelle, 70.
Pipit, rock, 118; on Handa, 40; tree, 118, 304,
Plaice, 279.
Plantago coronopus, 31; *maritima*, 31; *media*, 31.
Plectrophanes nivalis, 137.
Pleuronectes cynoglossus, 279; *flesus*, 280; *limanda*, 280; *microcephalus*, 279; *platessa*, 279.
Plover, golden, 21, 49, 212; grey, 213; shot near Kintradwell, 21; ringed, 213; breeds at Badenloch, 27; "Plover's page," 219.
Poa, annua, maritima, pratensis, 31.
Podiceps auritus, 246; *cristatus*, 245; *fluviatilis*, 246; *griseigena*, 245.
Pochard, 191, 310.
Pococke, Dr. Richard, Lord Bishop of Ossory, 4; on black-throated diver, 244; *The Tour through Sutherland in* 1760, 4; on swans, 187.
Pogge, 266.
Pole, 279.
Polecat, 65, 78, 303.
Pollack, 275.
Polygala vulgaris, 31.
Porbeagle, 253.
Porpoise, 86.
Port Gower, 20; rock pipit about, 118; linnet at, 130.
Portland, Duke of, 55; his collection at Wellbeck Abbey, 7, 9; his deer-forest, 44, 56, 88.
Portnacon, 17.
Porzana maruetta, 207, 311.
Potentilla anserina, 31; *tormentilla*, 31.
Pout, 275.
Power cod, 274.
Pratincola rubetra, 104; *rubicola*, 104.
Premiums offered for vermin, 299.
Priest Island, 30.
Primrose, Scotch, 54.
Primula Scotica, 54.
Pristiurus melanostomus, 254.
Procellaria leucorrhœa, 237; *pelagica*, 237.
Proc. of the Glasg. Nat. Hist. Soc., 7; on the squirrel, 90; on scaup, 192; on whimbrel, 225; on common tern, 228; on glaucous gull, 234 *note*; on palmated newt, 251.
Proc. of Royal Phys. Soc. of Edin., 6; on Caithness birds, 63; on scops-eared owl, 163; on the rough-legged buzzard, 167; on American bittern, 183; on ivory gull, 230; on Leach's petrel, 237 *note*.
Prunella vulgaris, 31.
Ptarmigan, 203, 311; dying out on Ben Armine, 23; decrease of, in Scotland, 203.
Puffin, 242; on Handa, 40.
Puffinus anglorum, 238.
Pulteneytown, redstart at, 106; willow wren at, 110; tree pipit at, 118; waxwing at, 120; rooks in chimneys of, 150.
Pyrrhocorax graculus, 145.
Pyrrhula europœa, 132.

Quail, 202, 311; nests near Dornoch, 21.
Quarries of Caithness pavement, 48.
Querquedula circia, 190; *crecca*, 189.
Quinaig, 28, 31, 34.

Rabbit, 69, 95; swarms in Rabbit Island, 38.
Rabbit Island, hen-harrier breeding on, 164; sheldrake common on, 188.
Raine, F., of Durham, 163; hen-harriers in collection of, 165; goshawk in collection of, 170; Greenland falcon in collection of, 173.
"Rain goose," 245.
Rainworth Lodge, Nottingham, 7.
Raja batis, 256; *circularis*, 256; *clavata*, 256; *fullonica*, 256; *lintea*, 256; *maculata*, 256; *radiata*, 256.
Rallus aquaticus, 206, 311.
Rana temporaria, 251.
Rangifer tarandus, 66, 68, 86.
Raniceps trifurcus, 277.
Rannoch, 33.
Ranunculus acris, 31.
Rat, black, 91; brown, 92.
Rattar, 312; sparrow-hawk at, 171.
Raven, 54, 151.
Razorbill, 239; on Handa, 39.
Ray, homelyn, 256; sandy, 256; shagreen, 256; sharp-nosed, 256; starry, 256; thornback, 256.
Reay, 17; flow district in parish of, 25; parish of, 26, 87; sand-links of, 96.
Reay Forest, 28, 30, 59, 60; fox in, 76;

wild cat in, 75; marten in, 77; otter in, 79; badger in, 80; red deer in, 87; hooded crow at, 147; record of ravens at, 152; barn owl shot in, 306.
Redbreast, 107.
Redpoll, lesser, 131; mealy, 131.
Redshank, 21, 223; dusky, 223.
Redstart, 106; black, 107.
Redwing, 99.
Reed bunting, nests at Badenloch, 27.
Regalecus banksii, 272.
Regulus cristatus, 109.
Reed, R., of Balnakiel, obtains eggs of quail, 311.
Reed, Captain Savile G., 7, 104; the journals of his nesting trips, 9; on the missel-thrush, 97; on the long-tailed tit, 113; on the marsh tit, 115; on the sparrow, 127; observes common bunting at Bettyhill, 135; on rooks in Thurso, 150; records nest of short-eared owl at Syre, 161; on the eagle at Brora, 167; on the osprey, 178; on the grey-lag goose, 184; notes partridge in north-east Sutherland, 202; on grouse, 204; on black-headed gull, 230; on sea-gull, 231; on black-throated diver, 244.
Reid, William, of Wick, 2, 53, 69; his manuscripts, 7; contributes to *The Field*, 9; on the water-shrew, 74; on the wild cat, 75; on the fox, 76; on the stoat, 78; on the polecat, 79; on the seal, 81; on the grey seal, 82; on the hump-backed whale, 83; on the rorqual, 84; on the pilot whale, 86; on deer, 88; on the wood mouse, 91; on the water vole, 92; on the field vole, 93; on the stonechat, 106; on the redstart, 107; on the black redstart, 107; on the willow wren, 111; finds nest of sedge-warbler at Stirkoke, 112; on the blue tit, 115; on the creeper, 115; on the tree pipit, 118; on the great grey shrike, 119; siskin observed by, 126; on the lesser redpoll, 131; mentions bullfinch, 133; on the reed bunting, 137; does not mention magpie, 146; mentions carrion crow, 147; on rooks in Caithness, 151; notes swift, 153; records nightjar, 154; on the greater-spotted woodpecker, 155; mentions barn owl, 159; mentions Iceland falcon, 173; observes hobby, 175; observes bernacle, 186; does not recognise Bewick's swan, 187; mentions pintail, 190; obtains young of red-breasted merganser, 197; mentions stock-dove, 199; observes water-rail, 207; mentions little stint, 219; sees knot, 220; records ruff shot at Wick, 221; skin of spotted sandpiper in possession of, 222; on greenshank, 224; includes Sabine's gull, 229; mentions pomatorhine skua, 235; on adder, 247; on lizard, 248; on slow-worm, 249; on newts, 251; mentions porbeagle, 253; on torpedo, 255; records sturgeon, 257; mentions basse, 258; mentions John Dory, 262; on angler fish, 264; records dusky sculpin, 268; records cook wrasse, 273; on power, 274; on the torsk, 277; on the flounder, 280; on solenette, 280; on pilchard, 292; records great pipe fish, 295; records oblong sunfish, 296; records hog fish, 296.
Reindeer, 66, 67, 86.
Rhiconich, whinchat at, 104; tree-sparrow breeds at, 128; marten killed in, 303.
Rhina squatina, 255.
Rhombus lævis, 279; *maximus*, 278.
Rhon Island, frequented by seals, 38.
Ribigail, partridge at, 202; nightjar shot at, 306.
Rissa tridactyla, 234.
Ristal Island, 30.
Roan Island, 20; stormy petrel breeding on, in 1884, 237.
Rockling, three-bearded, 276.
Roebuck, Mr., 69.
Roedeer, 89; in 1630 A.D., 65.
Rogart, parish of, 26; coot in, 208.
Roller, 157, 306.
Rook, 148.
Rorqual, common, 83; great northern, 84.
Rosebank, wryneck at, 156.
Rosehall, 13, 15, 22, 40; fallow-deer at, 89; missel-thrush at, 97; redstart at, 106; creeper common at, 115; siskin at, 126; crossbill at, 134; common bunting at, 135; barn owl breeds about, 159; long-eared owl at, 160; tawny owl breeds at, 161; kites at, 171; partridge common at, 201; black game dying out in, 205; coot breeds at, 208; magpie at, 305; spotted crake shot at, 311.
"Rose Lintie," 130.

Ross, Eric, keeper, 156.
Ross, whitethroat in, 108.
Rothesay aquarium, 80.
"Rowans," kittiwake breeds on the, 234.
Rudha Bhra, 46.
Ruff, 221.
Ruffe, 258.
Rumex pulcher, 31 ; *acetosella*, 31.
Russell, Miss, *A Handbook to Thurso, etc.*, 8.
Ruticilla phœnicurus, 106 ; *titys*, 107.

Sabhal Bheag, 60.
Sabhal Mohr, 60.
Sail Fluke, 279.
St. John, C., *A Tour in Sutherlandshire, etc.*, 1 *note*, 6, 56, 163 *note* ; *Wild Sports of the Highlands* (1846), 6 ; on the fire-crested wren, 110 ; on Ray's wagtail, 117 ; on the goldfinch, 125 ; finds martin at Durness, 123 ; on the crossbill, 134 ; sees red-billed chough, 145 ; records Tengmalm's owl, 163 ; on the kite, 172 ; observes golden-eye on Loch Laoghal, 193 ; on dotterel, 211 ; on red-necked phalarope, 216.
St. John's Loch, Dunnet, 49.
St. Kilda, 39 ; sheep of, 50 ; puffin on, 242 *note*.
"Saithe," 275.
Salmo alpinus, 290 ; *cambricus*, 286 ; *cornubiensis*, 287, 289 ; *estuaris*, 287 ; *fario*, 286, 312 ; *ferox*, 287 ; *fontinalis*, 290 ; *levenensis*, 36, 288 ; *salar*, 284, 288 ; *stomachicus*, 287, 289 ; *trutta*, 286.
Salmon, 284.
Salmon, Mr., a judge of eggs, 210.
Salmonidæ of Durness, 32.
Sanderling, 221, 312.
Sand-hills at Dunnet, 47.
Sandison, Sergeant, bird-stuffer, 2, 75.
Sandpiper, purple, 21, 220 ; common, 35, 199, 222 ; curlew, 220 ; green, 222.
Sandside, 20, 69 ; deer at, 88 ; nightjar at, 154 ; sparrow-hawk at, 171 ; merlin shot at, 176 ; bittern shot at, 182 ; bernacle shot at, 186.
Sandside Head, 46.
Saussurea alpina, 142.
Saxicola œnanthe, 103.
Saxifraga hypnoides, 142 ; *oppositifolia*, food of snow bunting, 143.
Scandinavian names in northern counties, 17.
Scarabæus stercorarius, kestrel breeding on, 177.
"Scarf," 179.
Scarabhen, 44, 45, 56 ; ptarmigan on, 203.
Scaup, 191.
Sciberscross, Iceland falcon at, 173.
Scilla verna, 31.
Sciurus vulgaris, 89.
Scolopax rusticola, 216.
Scomber colias, 263 ; *scomber*, 263.
Scombresox saurus, 283.
Scotch Fisheries Improvement Association, on the minnow, 282.
Scoter, common, 56, 194 ; velvet, 194.
Scotscalder, roller to be seen at, 157.
Scotsman, review by H. Osborne in, 11 ; H. Osborne in office of, 12.
Scottish Naturalist, on the squirrel, 90.
Scourie Bay, 37, 42 ; meaning of, 17 ; song-thrush at, 98 ; whin-chat at, 104 ; sparrow common at, 127 ; tree-sparrow at, 128 ; common bunting at, 135 ; sky-lark common at, 144 ; starling abundant at, 144 ; bernacle goose near, 186 ; ivory gull killed at, 229 ; stormy petrel taken at, 237 ; glow-worm common about, 249.
Scrope's *Days of Deer-Stalking*, 65, 66.
Scyllium stellare, 254 ; *canicula*, 254.
"Sea doug," 254.
Seal, common, frequents Rhon Island, 38 ; 51, 81 ; harp, 81, 303 ; ringed, 81 ; grey, 82 ; hooded, 83.
Sea pinks, rock pipit breeds amongst, 119.
Sea-trout, 34, 286 ; snail, 267.
Sebastes Norwegicus, 260.
Sedum rhodiola, 31.
Seebohm, *British Birds* of, on skua, 236 *note* ; on the redstart, 107 *note*.
Seeley, Dr., his collection in Sutherland, 134.
Selache maxima, 253.
Selaginella spinulosa, 142.
Selby, P. J., *On the Quadrupeds, etc. etc., of Sutherland*, 5 ; on the wild-cat, 75 ; on the wood mouse, 91 ; on the hare, 94 ; on the missel-thrush, 97 ; on the song-thrush's winter residence, 98 ; on the redstart, 106 ; on the white-throat, 108 ; on the sedge-warbler, 112 ; on meadow pipit, 117 ; on the house martin, 123 ; on the eagle, 167 ; on the scaup, 191 ; on the ring-dove, 198 ; on the partridge, 201.

Serinus hortulanus, 126.
Sewin, 286.
Shad allis, 292; twaite, 292.
Shag, on Handa, 40; 57, 62, 179.
Shanny, 269.
Shark, blue, 252; basking, 253; hammer-headed, 253; Greenland, 255.
Shearer, R. I., *Notes on the Ornithology of Caithness* (1861), 6; contributes to *The Field*, 9; on Caithness birds, 63; 69; on the weasel, 77; on the polecat, 79; mentions gold-crest, 109; shoots a chiff-chaff at Ulbster, 110; on the brambling, 130; parrot crossbill in list of, 134; includes Lapland-bunting, 137; observes roller at Ulbster, 157; on the cormorant's nest, 179; mentions red-breasted goose, 186; records golden-eye, 193; shoots quail, 203; records Temminck's stint, 219; records curlew sandpiper, 220; records green sandpiper, 223; records dusky redshank, 223; bar-tailed godwit with, 224; records ivory gull, 230.
Shearwater manx, 238.
Sheldrake, 187.
Shetland, faunal area of, 59; red-breasted merganser in, 197.
Shiant Isles, puffin on, 242 *note*.
Shin, the river, 26, 41; goosander on, 195.
Shinary, water vole along the river, 92.
Shoveller, 189.
Shrike, great grey, 119; red-backed, 120.
Shrew, common, 72; water, 72; water, shot at Inchnadamph, 73.
Shurrery, long-eared owl from, 160; snowy owl shot at, 163; black game from, 206; honey-buzzard shot at, 308.
Sibbald, *Scotia Illustrata*, 73; on the water-shrew, 73; on the "Lavellan," 248.
Sibbaldia procumbens, 142.
Sibster House, rooks at, 149.
Silene maritima, 31.
Silester, breeding station at, 105.
Sim, George, 297 *note*.
Sinclair, Catherine, 7.
Sinclair, Dr. Eric Sutherland, of Wick, 6, 62; *List of Birds of Caithness* by, 8; his collection, 100; mentions red-backed shrike, 120; mentions pied fly-catcher, 122; hawfinch in collection of, 127; mentions ortolan bunting, 136; includes starling, 145; mentions rosey pastor, 145; records jay, 146; includes lesser spotted woodpecker, 155; mentions barn owl, 129; mentions tawny owl, 161; has snowy owl in his collection, 162; records marsh harrier, 164; includes goshawk, 170; mentions honey-buzzard, 172; mentions hobby, 175; mentions purple heron, 182; mentions red-breasted goose, 186; includes ruddy sheldrake, 188; includes gadwall, 189; includes harlequin duck, 193; mentions hooded merganser, 197; mentions smew, 197; Baillon's crake in collection of, 207; on capture of little bustard, 209; Temminck's stint in collection of, 219; curlew sandpiper in collection of, 220; includes sanderling, 221; includes buff-breasted sandpiper, 221; records spotted sandpiper, 222; green sandpiper in collection of, 223; dusky redshank, 223; little gull in collection of, 231; Leach's petrel in collection of, 237; includes sooty shearwater, 238; remarks on collection of, 302.
Sinclair, G. S., of Wick, Brunnich's guillemot with, 241.
Sinclair, Sir John, Bart., of Ulbster, 4, 16 *note*[2]; *Memoir of*, by Catherine Sinclair, 7.
Sinclair, J. H., of Ballantra Cottage, 76, 146.
Sinclair, Thomas, 55.
Sinclair, Sir Tollemache, 54, 150.
Sinclair Bay, incident regarding great northern diver in, 243.
Siphonostoma typhle, 295.
Siskin, 125; nests in Sutherland, 22.
Skate, 256; flapper, 256.
Skerra Point, 20.
Skerries, 31 *note*.
Skiag Burn, twite at, 132.
Skibo, hoopoe killed at, 158; pheasant introduced at, in 1841, 201; capercaillie at, 206.
Skinnet Hill, rooks build on heather at, 150.
Skipper, 283.
Skirsa, 49.
Skirsa Point, 54.
"Skookie," 238.
"Skorrie," 232.
Skua, Buffon's, 236, 312; common, 235; pomatorhine, 235; Richardson's, 236.

Skye, faunal position of, 61.
Sletal, old forest and cairn of, 26.
Slow worm, 249.
Small, bird-stuffer, 109, 156; American bittern with, 183.
Smew, 197.
Smiles, S., *Robert Dick of Thurso* (1878), 8.
Smith, Dr. J. A., exhibits scops-eared owl, 163; shoots rough-legged buzzard in Caithness, 167.
Smoo Burn, 35; trout of, 289.
Smoo Cave, 35; rock-dove in, 199.
Smooth hound, 253.
"Snig," 293.
Snipe, common, 217; great, 217; jack, 217.
Snow bunting, nests in Sutherland, 3.
Snowie, Mr., birdstuffer, 311.
Sole, 280; lemon, 280.
Solea lascaris, 280; *lutea*, 280; *variegata*, 280; *vulgaris*, 280.
Solenette, 280.
Solway, faunal area of, 59.
Somateria mollissima, 194.
Sorex vulgaris, 72.
Souliskeir, 13; grey seal at, 82.
Souter, Dr., of Golspie, 83.
South Kensington Museum, collection of nests, etc., at, 9.
Sparrow-hawk, 170; house, 127; tree, 128.
Sparus dentex, 259.
Spatula clypeata, 189.
Speedie, Mr., tunny caught by fishermen of, 263.
Spey, minnow introduced in (1883), 282.
Spinningdale, Tengmalm's owl killed at, 163.
Spittal, merlin shot at, 176.
Sprat, 292.
Springbank, Thurso, eggs and nest of black scoter at, 195; turnstone preserved at, 215.
Spurn Point, Yorkshire, where grey plover leaves Britain, 213 *note*.
Squatarola helvetica, 213.
Squirrel, 89; in Scotland, 1630 A.D., 65.
Stack, goosander at, 196.
Stack Polly, 28.
Stafford, Lord, 87.
Stag, 67.
"Stang fish," 264.
Starling, 144, 305; on Handa, 40.
Steenson, kills snowy owl, 162.
Stemster, 150; willow wren at, 304; wren at, 304; pheasant introduced at, 310.
Stercorarius catarrhactes, 235; *crepidatus*, 236; *parasiticus*, 236, 312; *omatorhinus*, 235.
Sterna cantiaca, 229; *fluviatilis*, 227; *macrura*, 227; *minuta*, 228.
Stewart, Rev. Alex., records godwit, 225.
Stewart, keeper at Inverpolly, observes kite, 172.
Stickleback, 270; fifteen-spined, 271.
Stint, little, 219; Temminck's, 219.
Stirkoke, 54; wild cat got at, 75; missel-thrush breeds at, 98; flocks of field-fare at, 100; sedge-warbler breeding at, 112; magpie builds at, 146; night-jar at, 154; wryneck at, 156; long-eared owl breeds at, 160; buzzard shot at, 166; sparrow-hawk shot at, 171; pintail in Strath of, 190; pheasant preserved at, 201.
Stirling, J., reports reed bunting at Gorm Lochs, 137.
Stoat, 78; in Caithness, 77; on Ben Nevis, 78 *note*.
Stock-dove, 310.
"Stock-duck," 188.
Stocks, Major, obtains American bittern, 182.
Stoir, 37, 42; meaning of, 17; light-house of, 41; Point of, skylark at, 144; rooks feed at, 149; short-eared owl in, 160; heronry in, 181; grouse rare in, 204; torsk caught on cod banks of, 277.
Stoir Head, peregrine falcon at, 174; rock-dove common at, 199; small-spotted dogfish taken off, 254; smooth-hound caught off, 253.
Stone Age, 66.
Stone-chat, 105.
Stornoway, herring-fishery of, 13, 292.
Strathmore, 75; snowy owl at, 162; white-fronted geese common at, 309.
Strathsteven, wolf-fish from, 268.
Strathy, red-throated diver breeding about, 244.
Strathy Bay, tunny taken in, 263.
Strathy Point, 20, 45.
Strepsilas interpres, 214.
Strix flammea, 159, 306.
Stroma, fishermen of, 51 *note*; oyster-catcher abundant at, 215.
Stronchrubie, 31, 41; Pass of, 33; disappearance of martin from, 123.

Struthers, Professor, 83, 85.
Stuart's *Lays of the Deer Forest*, 87.
Sturgeon, 257.
Sturnus vulgaris, 144, 305.
Sucker, doubly-spotted, 271.
Suilbhein, vii, 28, 31.
Sula bassana, 62, 180.
Summer Islands, 30.
Sunfish, 296; oblong, 296.
Surmullet, 259.
Sus scrofa, 66, 67, 69, 86.
Sutherland, snow bunting nests in, 3; coast-line of, 13; total area of, 14; Gaelic names in, 17; backbone of, 28; scenery of, 32; crofters of, 48; faunal position of, 59; water system of, 60; peat mosses of, 87; age of trees of, 87.
Sutherland Association, Annual Reports of the, 5.
Sutherland, Duke of, 39; preserves best stags, 87; introduces American trout, 290.
Sutherland, John, of Inchnadamph, on the eagle, 169.
Sutherland, J., 2; on the cole tit, 114; on ivory gull, 239; records glaucous gull near Wick, 234.
Sutherland, J., of Huna, 50.
Sutherland, Mr., bird-stuffer, 71.
Swallow, 122.
Swan, mute, 186; Bewick's, 187.
Swanson of Rispond, on brent goose, 309.
Swift, common, 153.
Swinburne, J., 237 *note*.
"Swirlies," 51 *note*.
Swordfish, 261.
Sylvia atricapilla, 108.
Syngnathus acus, 295.
Syre, nests of missel-thrush at, 97; whinchat at, 104; marsh tit at, 114; sparrow common at, 127; nest of short-eared owl at, 161; heron breeds near, 181; black game in, 205.
Syrnium aluco, 160.
Syrrhaptes paradoxus, 200.

Tadorna cornuta, 187.
Tain, 108; resort of seals visible from, 81; pied flycatchers at, 121; crossbill shot near, 134.
Tait, W. R., 150.
Talpa europæa, 71.
Tannera Beg, 30.
Tannera More, 30.
Tape-worm, destroys grouse in 1874, 204.
Tarbert (or Tarbat), 38; ring-ouzel at, 102; meadow pipit at, 118.
Tay, faunal area of, 59.
Taylor, Captain Robert, 81.
Teal, 25, 189.
Tegetmeier, his work on pigeons, 11.
"Teitlan," 118.
Tench, 282.
Tennent takes merlin at Loch Gruagach, 176.
"Teogh-vingh," 224.
Tern, Arctic, 227; common, 227; lesser, 228; sandwich, 229.
Tetrao tetrix, 205; *urogallus*, 206.
Teugopterus unimaculatus, 279; *punctatus*, 279.
Thalassidroma pelagica, 144.
"Thirle Door, the," 49.
"Thistle cock," 135.
Thomson, Rev. Charles, 6.
Thrumster, 55; reed-bunting from, 137; hobby shot at, 175; ivory gull shot at, 230.
Thrush, missel, 97; song, 98; black-throated, 100.
Thurso, 2, 44, 54; natural history of parish of, 4; sperm whale at, 85; bird collection in Town Hall of, 100; blackbird at, 101; stonechat at, 106; greenfinch at, 126; rooks on Town Hall of, 150; swift seen in, 153; barn owl in Bank at, 159; Iceland falcon seen at, 173; merlin shot at, 176; golden-eye observed near, 192; ring-dove not common at, 198; black game from, 206; eggs of water-hen from, 208; ivory gull shot at, 230; sturgeon got at, 258.
Thurso Bay, 46; oblong sunfish taken in, 296.
Thurso Castle, sparrow-hawk at, 171; turnstone shot at, 215.
Thurso river, 16, 19, 52; redshank along, 223.
Titmouse, great, 113; long-tailed, 113; English cole, 114; marsh, 114.
Tinca vulgaris, 282.
Toad, common, 251.
Tongue, 1, 15, 36, 38, 42; wild-cat found at, 75; fox at, 76; marten at, 77; stoat at, 78; polecat at, 78; badger extinct at, 80; rabbits killed in woods of, 95; missel-thrush at, 97; song-thrush at, 98; blackbird common at,

101 ; whinchat at, 104 ; stonechat breeds at, 105 ; redbreast common at, 107 ; whitethroat at, 108 ; goldcrest scarce about, 109 ; hedge-sparrow common at, 112 ; long-tailed titmouse at, 113 ; great tit absent from, 113 ; cole tit at, 114 ; creeper at, 115 ; tree-pipit at, 118 ; great grey shrike at, 119 ; flycatcher at, 120 ; swallow rarely breeds at, 122 ; martin common at, 123 ; sand-martin at, 124 ; goldfinch not observed at, 125 ; greenfinch rare about, 126 ; sparrow common at, 127 ; chaffinch at, 129 ; linnet common at, 130 ; starling common at, 145 ; jackdaw rare at, 146 ; carrion crow at, 147 ; rookery at, 149 ; swifts seen at, 153 ; nightjar observed at, 154 ; barn owl breeds at, 159 ; long-eared owl breeds at, 160 ; decrease of eagles at, 167 ; kestrel resident at, 176 ; pintail at, 190 ; widgeon at, 191 ; pochard breeds at, 191 ; scaup rare at, 192 ; golden-eye seen near, 192 ; black scoter at, 195 ; turtledove from, 200 ; pheasant introduced at, 201 ; partridge seen at, 201 ; partridge become extinct since 1879 at, 202 ; water-hen common at, 208 ; coot shot at, 208 ; woodcock breeds around, 217 ; dunlin common near, 218 ; redshank about, 223 ; little grebe breeds at, 246 ; perch introduced near, 258 ; doree at, 262.

Topknot, Eckstrom's, 279; Müller's, 279.

Torpedo hebetans, 255 ; *nobiliana*, 255.

Torridon, 31.

Torsk, 277.

Totanus hypoleucos, 199 ; *calidris*, 223 ; *glottis*, 223, 312.

Tourist's Guide to Scotland and Caithness (H. Morrison, 1883), 8.

Trachinus draco, 264 ; *vipera*, 264.

Trachypterus arcticus, 271.

Trail of Castlehill, possesses Caithness whooper, 187 ; pomatorhine skua with, 235.

Trail of Melsetter, Orkney, 49.

Trail of Rattar, introduces trout, 313.

Trailigill, the, 36 ; the river, 102 ; twite's nest on, 131.

Transactions of Highland and Agricultural Society of Scotland, 17 *note*.

Transactions of Mineralogical Society of Britain, 8.

Transactions of Norfolk and Norwich Society, 30 *note*.

Trichechus rosmarus, 81.

Trichiurus lepturus, 261.

Trifolium repens, 31.

Trigla cuculus, 265 ; *lincata*, 265 ; *gurnardus*, 266 ; *hirundo*, 266 ; *lyra*, 266.

Tringa alpina, 218 ; *canutus*, 220, 312 ; *minuta*, 219 ; *striata*, 220 ; *subarquata*, 220.

Triton tæniatus, 250 ; *palmipes*, 250 *cristatus*, 250.

Triticum acutum, 31.

Troglodytes hirtensis, 116 ; *parvulus*, 116, 304.

Troup Head, ruffe obtained off, 258 ; *Sparus dentex* taken off, 259 ; small-mouthed wrasse recorded from, 273.

Trout, common, 286, 312 ; Gillarroo, 287 ; parr-marked, 287 ; tidal, 287 ; Crassapuil, 288 ; American brook, 290.

Trussler, T., shoots rosey pastor in Dunrobin Forest, 145.

Tub-fish, 266.

Tudor, John, obtains grey phalarope near Wick, 216.

Tumore, greenfinch at, 126.

Tunny, 263.

Turbot, 278.

Turdus iliacus, 99 ; *merula*, 100 ; *musicus*, 98 ; *pilaris*, 99 ; *torquatus*, 101 ; *viscivorus*, 97.

Turner, Professor Sir W., on harp seal, 303 ; on beaked whale, 304.

Turnix sylvatica, 206.

Turnstone, 21, 214.

Turtur communis, 200.

Tusk, 277.

Tweed, faunal area of, 59.

Twite, 131, 305.

"Tystie," 241.

Ulbster, 55 ; chiff-chaff at, 110 ; roller seen at, 157 ; quail at, 202.

Ullapool, 14, 29 ; the river, 29.

Uppat Woods, honey buzzard shot in, 22, 172.

Upupa epops, 157, 306.

Uria grylle, 241.

Urtica dioica, 31.

Vanellus vulgaris, 214.

Vermin, premiums offered for, 299.

Veronica humifusa, 142.

Vesperugo pipistrellus, 70.
Viola canina, 31.
Viper, 247.
Vipera berus, 247.
Vole, common field, 93; water, 92, 304.
Vulpes vulgaris, 76.

Wagtail, grey, 117; pied, 116; Ray's, 117; white, 116.
Wallace, 138 *note* [1].
Wallis, H. M., of Reading, on white-tailed eagle, 307.
Wallis, J. C. M., on the sparrow, 127; on the tree-sparrow, etc., 128; on grey-lag goose, 184; obtains nest of pintail, 190; finds goosander near Lairg, 196; observes whimbrel, 225; pochard seen by, 310.
West Cromarty, areas of, 16; mountains of, 28; lochs of, 28; faunal position of, 61.
Walrus, 81.
Warbler, blackcap, 108; sedge, 112, 304.
"Water-Craw," 103.
Water-hen, 208.
Water-lily, yellow, 34.
Water-rail, 206, 311.
Watten, magpie builds at Mill of, 146; rooks at, 149; nightjar at, 154; long-eared owl breeds in, 160; whimbrel in parish of, 226.
Waxwing, 120; H. Osborne on the, 11.
Weasel, 65; common, 77.
Weever, greater, 264; viper, 264.
Welbeck Abbey, 7, 9; collection at, 103; redbacked shrike at, 120; ravens in collection at, 152; short-eared owl in collection at, 161; tawny owl, 161; hen-harrier in collection at, 165; buzzard in collection at, 166; rough-legged buzzard at, 167; eagles at, 168; white-tailed eagle, 170; Iceland falcon absent from, 173; peregrine absent from collection at, 175; osprey at, 178; bittern in collection at, 182; sheldrake in collection at, 188; red-breasted merganser in collection at, 197; ptarmigan in collection at, 203; ringed plover and little plover in collection at, 213; turnstone in collection at, 215; little stint in collection at, 219; purple sandpiper at, 220; sanderling at, 221; pomatorhine skua at, 235; great northern diver at, 243.
Wernerian Natural History Society, on rock-dove, 199.
Wester, pintail at, 190.
Westerseat, Pallas sand grouse shot at, 200.
Westfield, rooks at, 149; rookery at, 151; long-eared owl from, 160; sparrow-hawk at, 171; merlin shot at, 176; whooper shot at, 187; Sclavonian grebe shot at, 246.
Westminster, Duke of, his deer-forest, 35; preserves wild-cat, 75; improving stag heads, 87.
West Ross, watershed of, 29; faunal area of, 59; water-system of, 60.
Whale, hump-backed, 83; pilot, 86; sperm, 85; white, 85.
Wheatear, 103.
Whimbrel, 225, 312.
Whinchat, 104.
Whitaker, J., of Rainworth Lodge, Nottingham, 7, 9, 160, 162; on the rough-legged buzzard, 167; includes bittern, 182; includes little stint, 219.
Whitbread, Mr., 79; pheasant introduced by, at Assynt (1869), 201.
Whitehills, hammer-headed shark near, 253; grey notidanus at, 254.
Whiten Head, twite at, 132; white-tailed eagle near, 168; peregrine falcon at, 174; colony of cormorants at, 179.
Whitethroat, 108.
Whiting, 274.
"Whitteret," 65, 78.
Whooper, 186.
Wick, 2, 44, 84; geology, etc., of parish of, 6; birth-place of H. Osborne, 11; prison, 11; birds in parish of, 62; water-shrew at, 74; rorqual at, 83; deer at, 88; song-thrush seen at, 99; redstart at, 107; redbreast at, 108; English cole tit at, 114; great grey shrike in market-place of, 119; swallow at, 123; "Old Man of," frequented by martins, 123; nest of siskin found at, 126; greenfinch in garden at, 126; rooks in chimneys of, 150; Stack of, ravens breed on, 153; lesser spotted wood-pecker at, 155; purple heron obtained in parish of, 182; whooper at, 187; Pallas sand-grouse shot near, 200; quail near, 202; lapwing in parish of, 214; grey phalarope obtained near, 216; little stint shot at, 219; ruff shot near, 221; Arctic tern breeds near,

227 ; lesser tern near, 228 ; glaucous gull killed near, 234 ; porbeagle about, 253 ; thrasher shark at, 253 ; viper weever at, 264 ; "horsefish" about, 271 ; cook wrasse taken at, 273 ; turbot got off, 278 ; migration of eels at, 293 ; great pipe fish at, 295.
Wick Bay, purple sandpiper in, 220 ; Montagu's sucker obtained in, 267.
Wick Bridge, great northern diver killed near, 243.
Wick, the river, 19, 44, 52, 92 ; whooper on, 187 ; dunlin on, 219 ; great northern diver on, 243 ; red-necked grebe seen on, 245 ; flounder in, 280 ; pike caught in, 283.
Widgeon, 25, 190, 309.
Wigtownshire, ravens in, 151 *note*.
Wild-boar, 66, 86.
Wild-cat, in Sutherland, 26, 75, 303.
Wild-duck, 188.
Wild-geese breed about Badenloch, 27.
Wild white cattle, 89.
Wilkinson, Charles, shoots buzzard at Stirkoke, 166 ; shoots hobby at Thrumster, 175.
Willow wren, 110, 304.
"Willy wet-feet," 222.
Wilson, Dr., observes cirl bunting, 136 ; mentions purple heron, 182.
Wilson, James, 5, 62 *note* [2], 125 ; *A Voyage round the Coasts of Scotland, etc.* (1842), 5 ; on the sheldrake, 188 ; sees specimen of little gull, 231.
Wilson of Aberdeen, 86.
Wilson of Terperslie, Alford, 139 *note*
Wilson of Woodville, 240.
Wolf, 69, 76 ; the last, of Sutherland, 26 ; in Scotland 1630 A.D. and till *c.* 1700 A.D., 65.
Wolf-fish, 268.
Wolley, 126, 169 ; manuscripts of, 7 ; on the ring-ouzel, 102 ; finds nest of twite, 131 ; on the raven, 152 ; on hen-harrier, 164 ; on the buzzard, 166 ; on the eagle, 167 ; on the white-tailed eagle, 169 ; obtains eggs of white-tailed eagle from Dunnet Head, 170 ; receives eggs of sparrow-hawk from Sutherland, 171 ; on the merlin, 175 ; on heronry near Golspie, 181 ; on greylag goose, 184 ; fails to find scaup in 1849, 192 ; sees captive little bustard, 209 ; on the egg of little bustard, 210 ; shoots dunlin near Loch Assynt, 218 ; on sandpiper, 222 ; on the egg of the greenshank, 224 ; shoots common tern off Badcall, 228 ; on guillemot, 240 ; records great-crested newt, 250 ; obtains palmated newt, 250.
Woodcock, 56, 216.
Woodpecker, greater spotted, 155, 306 ; green, 156.
Wood-wren, 111, 304.
Wormald, J., shoots red-breasted merganser at Freswick, 197 ; kills great snipe at Freswick, 217 ; kills godwit at Freswick (1878), 225.
Wotton & Co., Taunton, 134.
Wrasse, ballan, 272, 273 ; cook, 273 ; small-mouthed, 273.
Wren, 116, 304 ; of St. Kilda, 116.
Wright, James, of Rawcliffe Hall, 173.
Wryneck, 156.
Wych-elm at Tongue, 42.

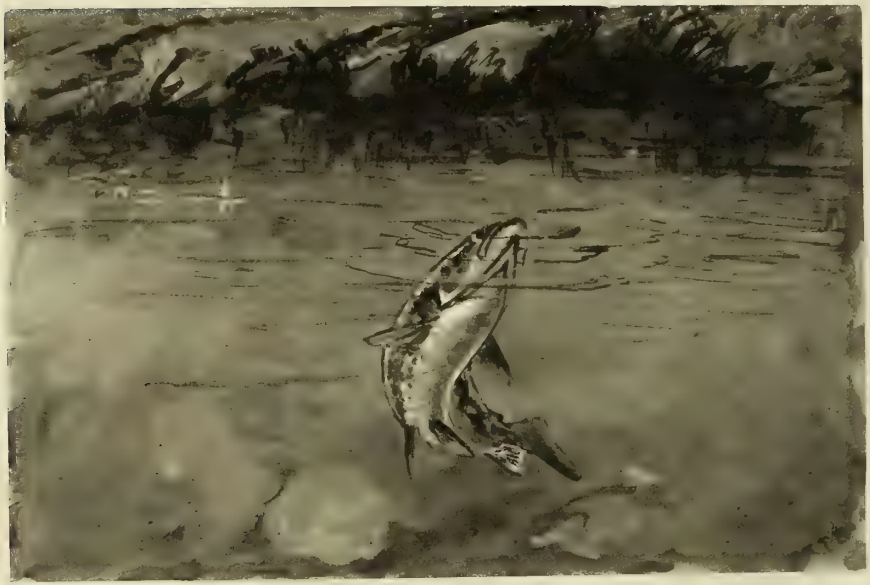
Xema sabinii, 229.
Xiphias gladius, 261.

Yellowhammer, 136.
Young, A., vi, 285.
Young, J. G. K., on the redstart, 106 ; on the house-martin, 123 ; observes flock of twite, 132 ; on absence of starling at Inchnadamph, 145, 286 *note*.
Young of Invershin, collection of trout skins by, 288.

Zeus faber, 262.
Zoarces viviparus, 269.
Zoologist on nesting tours, 7 ; on palmated newt, 250 ; on the roller, 306.
Zygæna malleus, 253.

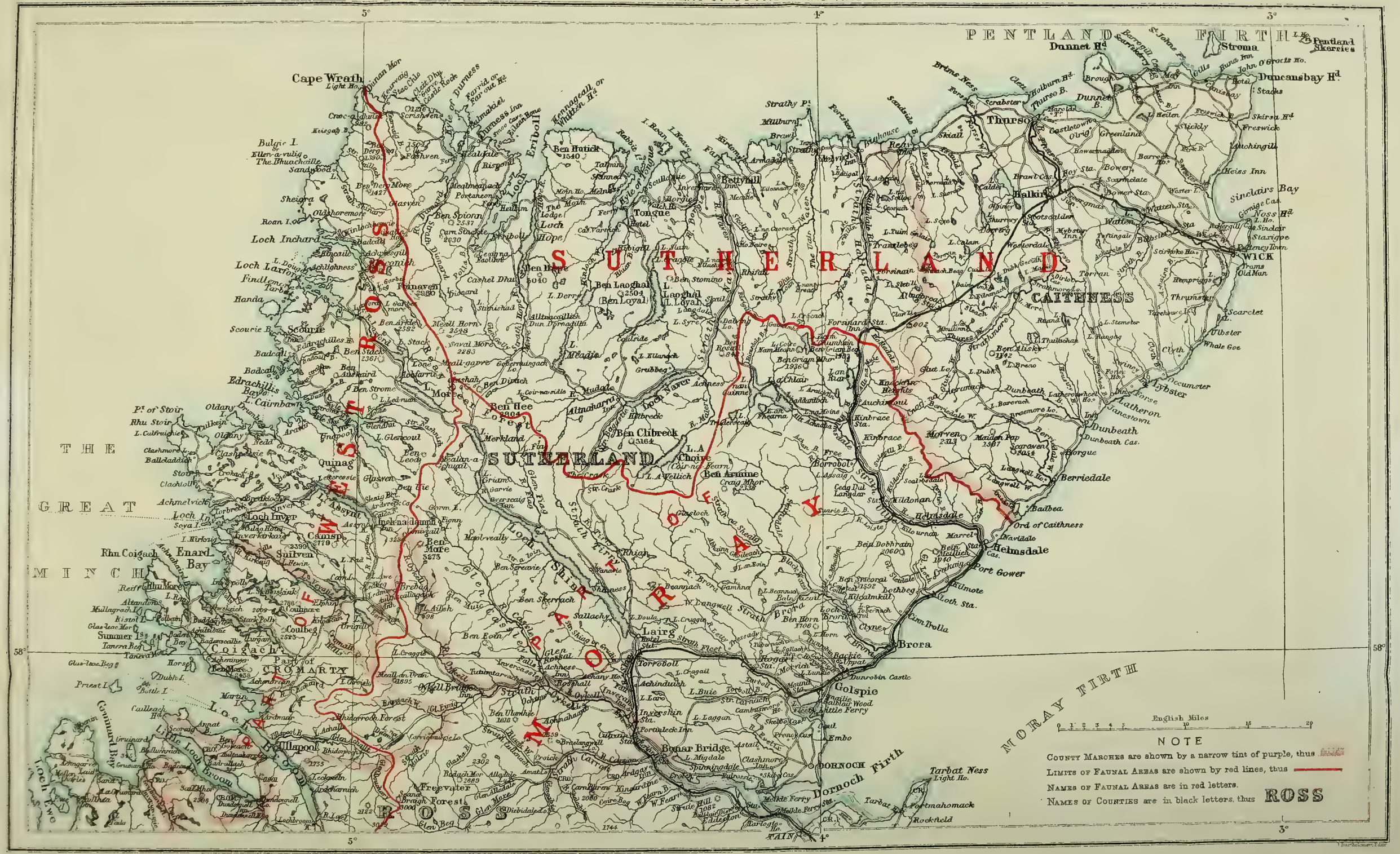
Some of our readers may consider our Index unnecessarily full and even prolix. Our object is to afford every possibility for future additions being easily made,

both in the body of the book and in the Index, not only as regards the general fauna, but also as regards the minutiæ of distribution at the many different localities mentioned. The book may then, as we intend it to do, serve as a means of future chronological records, as we insist upon the potent fact that there is continued, and even rapid change going on in the extension of range and distribution of species.



Printed by T. and A. Constable, Printers to Her Majesty,
at the Edinburgh University Press.

MAP SHOWING THE FAUNAL AREAS OF SUTHERLAND AND CAITHNESS.


SUTHERLAND
CAITHNESS
WESTER ROSS
EASTER ROSS
MORAY FIRTH
PENTLAND FIRTH
THE GREAT MINCH
Cape Wrath
Dunnet Hd.
Stroma
Duncansbay Hd.
Thurso
Wick
Halkirk
Sinclairs Bay
Ben Hutick 1540
Ben Hope 3040
Ben Loyal 2504
Ben Klibreck 3164
Ben Armine
Ben Stack 2367
Ben Hee 2804
Ben More 3273
Ben Mare 3673
Ben Spionn 2537
Ben Dearg 2839
Ben Wyvis 3429
Ben Alligin 2359
Ben Eighe 3309
Ben Laoghal
Ben Stomino
Ben Klder 2957
Ben Griam Mhor 1936
Ben Musley 1142
Ben Dobhrain 2060
Ben Morven 2313
Ben Freiceadain 2391
Ben Tiaskal 1592
Ben Horn 1706
Ben Meillich 1940
Maiden Pap 2567
Scaraven 2054
Morven 2313
Foinaven 2980
Arkle 2582
Meall Horn 2538
Sval More 2283
Meall-gaire 2527
Cul Beag 2523
Coulbeg 2523
Stack Polly 2009
Suilven 2399
Canisp 2779
Quinag 2653
Glas Leac Mor 2786
Ben Klmlidh 1618
Ben Wyllie 1755
Ben Leoch 2304
Ben Wevil 2122
Ben Klligin 2359
Ben Eighe 3309
Ben Dearg 2839
Ben Wyvis 3429
Ben Klder 2957
Ben Griam Mhor 1936
Ben Musley 1142
Ben Dobhrain 2060
Ben Morven 2313
Ben Freiceadain 2391
Ben Tiaskal 1592
Ben Horn 1706
Ben Meillich 1940
Maiden Pap 2567
Scaraven 2054
Loch Inchard
Loch Laxford
Loch Eriboll
Loch Hope
Loch Shin
Loch Assynt
Loch Inver
Loch Broom
Loch Ewe
Loch Maree
Loch Fleet
Loch Carron
Loch Kanaird
Loch Glencoul
Loch Merkland
Loch Veyatie
Loch Naver
Loch Choire
Loch Calder
Loch Watten
Loch Toftingall
Loch Heilen
Loch Stickly
Loch Scarmclate
Loch Brora
Loch Badanloch
Loch Rangag
Loch Thurso
Loch Stemster
Loch Yarrows
Loch Lybster
Loch Occumster
Loch Clyth
Loch Whaligoe
Loch Ulbster
Loch Scarclet
Loch Heilen
Loch Stickly
Loch Toftingall
Loch Watten
Loch Calder
Loch Brora
Loch Badanloch
Loch Rangag
Loch Thurso
Loch Stemster
Loch Yarrows
Loch Lybster
Loch Occumster
Loch Clyth
Loch Whaligoe
Loch Ulbster
Loch Scarclet
Strath Naver
Strath Halladale
Strath Brora
Strath Fleet
Strath Oykel
Strath Carron
Strath Kanaird
Strath Kirkaig
Strath Kanaird
Strath Fleet
Strath Oykel
Strath Carron
Strath Halladale
Strath Naver
Strath Brora



One Volume, Royal 8vo. 50*s.*

WITH 40 FULL-PAGE ILLUSTRATIONS OF SCENERY AND ANIMAL LIFE, DRAWN BY GEORGE REID, R.S.A., AND J. WYCLIFFE TAYLOR, AND ENGRAVED BY AMAND DURAND.

NATURAL HISTORY & SPORT IN MORAY

By CHARLES ST. JOHN

AUTHOR OF "WILD SPORTS IN THE HIGHLANDS"



EDINBURGH: DAVID DOUGLAS

1882

Two Volumes, Crown 8vo, Illustrated. 21*s.*

A TOUR IN SUTHERLANDSHIRE

WITH EXTRACTS FROM THE FIELD BOOKS OF A SPORTSMAN AND NATURALIST

By CHARLES ST. JOHN

AUTHOR OF "NATURAL HISTORY AND SPORT IN MORAY."

SECOND EDITION

WITH AN APPENDIX ON THE FAUNA OF SUTHERLAND

By J. A. Harvie-Brown and T. E. Buckley.



EDINBURGH: DAVID DOUGLAS.

1884.

One Volume, Demy 8vo, with Maps and Illustrations. 12*s.*

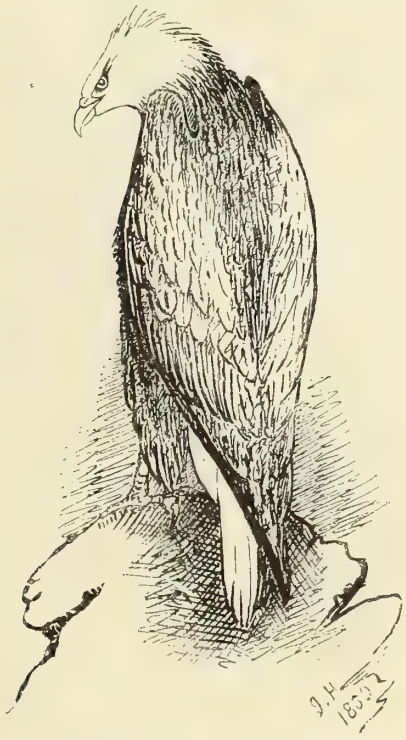
NOTES AND SKETCHES

FROM THE

WILD COASTS OF NIPON

WITH CHAPTERS ON CRUISING AFTER PIRATES
IN CHINESE WATERS

By CAPTAIN H. C. ST. JOHN, R.N.



EDINBURGH: DAVID DOUGLAS.
1880.

One Volume, Demy 8vo. 18*s.*

SASKATCHEWAN

AND

THE ROCKY MOUNTAINS

A DIARY AND NARRATIVE OF TRAVEL, SPORT, AND ADVENTURE DURING A JOURNEY THROUGH THE HUDSON BAY COMPANY'S TERRITORIES

By THE EARL OF SOUTHESK, K.T.



WITH MAPS AND ILLUSTRATIONS.

EDINBURGH: DAVID DOUGLAS.

Nearly Ready. One Volume, Demy 8vo. To Subscribers only.

THE BIRDS

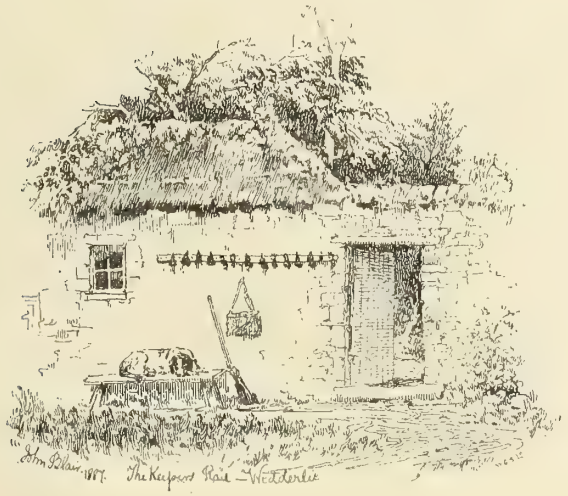
OF

BERWICKSHIRE

BY

GEORGE MUIRHEAD

FELLOW OF THE ZOOLOGICAL SOCIETY OF LONDON, OF THE ROYAL PHYSICAL SOCIETY OF EDINBURGH, OF THE BOTANICAL SOCIETY OF EDINBURGH, MEMBER OF THE BERWICKSHIRE NATURALISTS' CLUB, ETC.



EDINBURGH: DAVID DOUGLAS.

1887.

One Volume, Demy 8vo. 15*s.*

THE ART OF GOLF

BY SIR WALTER SIMPSON, BART.



With 20 *Illustrations from Instantaneous Photographs of Professional Players, chiefly by A. F. Macfie, Esq.*

EDINBURGH: DAVID DOUGLAS

One Volume, Demy 8vo, with Etchings and Map. 8*s.* 6*d.*

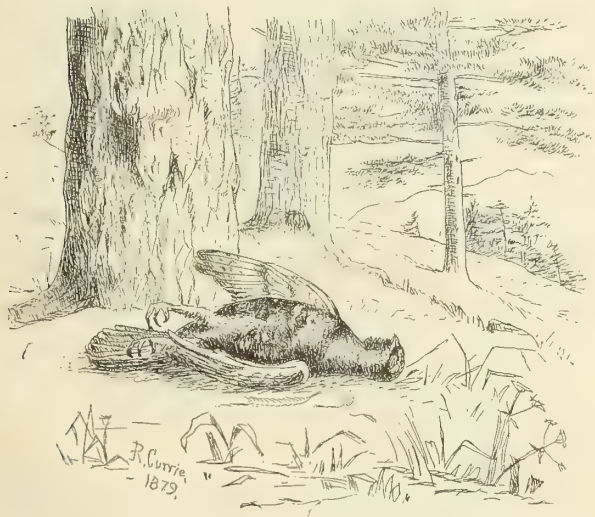
THE

CAPERCAILLIE IN SCOTLAND

WITH SOME ACCOUNT OF THE EXTENSION OF ITS RANGE SINCE ITS RESTORATION AT TAYMOUTH IN 1837 *AND* 1838

By J. A. HARVIE-BROWN, F.Z.S.

MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, ETC.



EDINBURGH: DAVID DOUGLAS. MDCCCLXXIX

BOOKS ON HORSEMANSHIP

E. L. ANDERSON.

The *Saturday Review* says:—"It is impossible to read a page in any of his books without recognising the fact that this is a practical horseman speaking from long experience of an art which he has devotedly studied and practised."

The *Sport Zeitung*, Vienna, says:—"The best new English work on Riding and Training that we can recommend is the book 'Modern Horsemanship.'"

I.

MODERN HORSEMANSHIP

A NEW METHOD OF TEACHING RIDING AND TRAINING BY MEANS OF INSTANTANEOUS PHOTOGRAPHS FROM THE LIFE

NEW AND REVISED EDITION, CONTAINING SOME OBSERVATIONS UPON THE MODE OF CHANGING LEAD IN THE GALLOP

In One Volume, Demy 8vo. Price 21s.

II.

VICE IN THE HORSE

AND OTHER PAPERS ON HORSES AND RIDING

New Edition, with Additions. Demy 8vo. Illustrated. Price 5s.

III.

THE GALLOP

ILLUSTRATED BY INSTANTANEOUS PHOTOGRAPHY

Small 4to. 2s. 6d.

COLONEL DODGE.

A CHAT IN THE SADDLE

OR, PATROCLUS AND PENELOPE

BY THEO. A. DODGE, LIEUTENANT-COLONEL U.S. ARMY

Illustrated by 14 Instantaneous Photographs. One Volume, Demy 8vo. Price 21s.

"A very learned and charming book about horses."—*Graphic.*

"We recommend Col. Dodge's work as one of the most important and valuable treatises upon the art of riding that we have in our language."—*Saturday Review.*

ROBERT MORTON.

ON HORSE-BREAKING

BY ROBERT MORTON

Second Edition. One Volume, Crown 8vo. Price 1s.

ALEXANDER PORTER.

THE GAMEKEEPER'S MANUAL

BEING AN EPITOME OF THE GAME LAWS FOR THE USE OF GAMEKEEPERS AND OTHERS INTERESTED IN THE PRESERVATION OF GAME

BY ALEXANDER PORTER, DEPUTY CHIEF CONSTABLE OF ROXBURGHSHIRE

One Volume, Crown 8vo. Price 1s.

EDINBURGH: DAVID DOUGLAS, 15A CASTLE STREET.